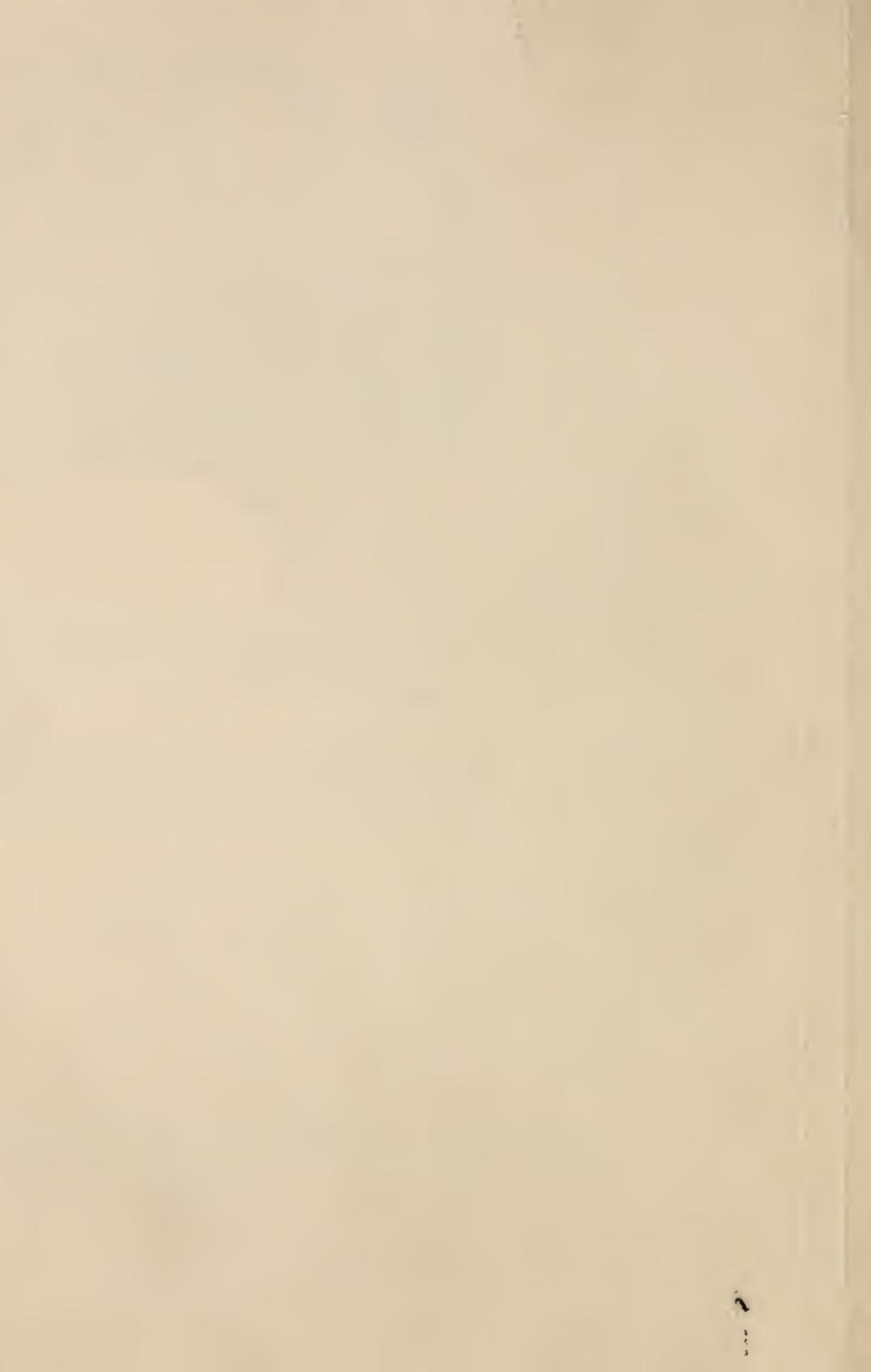
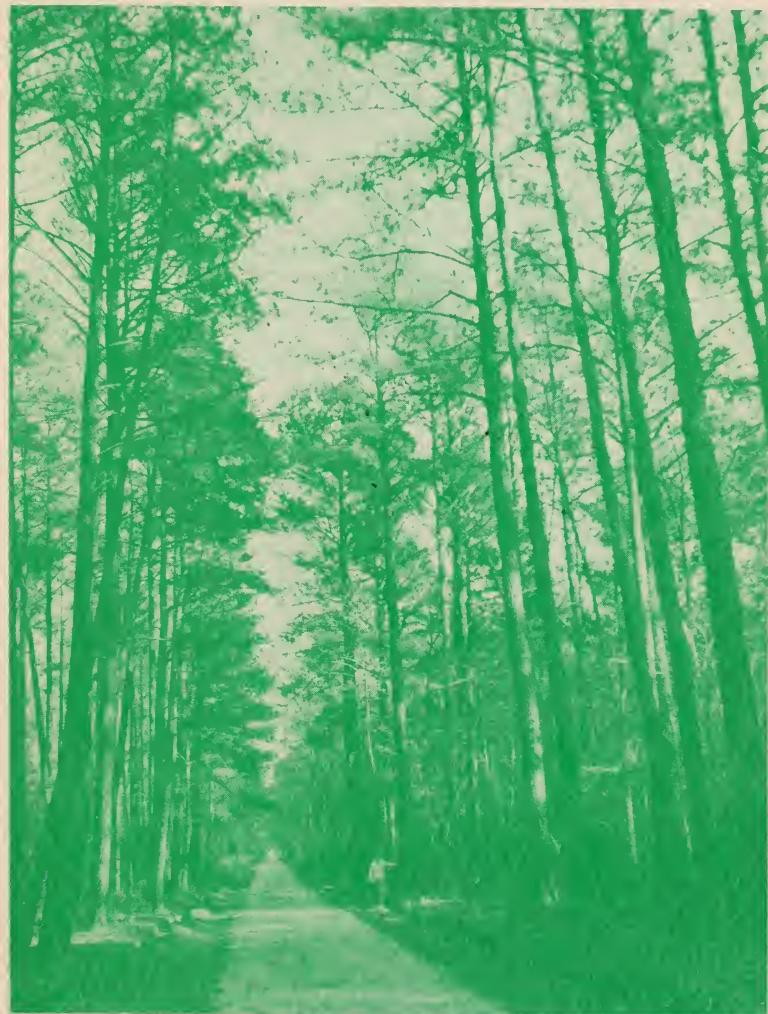


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# The **TIMBER RESOURCES** of MARYLAND



U.S. FOREST SERVICE RESOURCE BULLETIN NE-7  
1967

NORTHEASTERN FOREST EXPERIMENT STATION, UPPER DARBY, PA.  
FOREST SERVICE, U.S. DEPARTMENT OF AGRICULTURE  
RICHARD D. LANE, DIRECTOR

## PREFACE

UNDER the authority of the McSweeney-McNary Forest Research Act of May 22, 1928, and subsequent amendments, the Forest Service, U. S. Department of Agriculture, conducts a series of continuing forest surveys of the states to provide up-to-date information about the forest resources of the Nation.

A resurvey of the timber resources in Maryland was made in 1962-63 by the Northeastern Forest Experiment Station, approximately 14 years after the initial forest survey. In this resurvey, as in the initial survey, the Northeastern Station again received cooperation from the Maryland Department of Forests and Parks. The Department purchased the aerial photographs of the entire State that were used for the resurvey. State field crews remeasured some of the initial forest survey plots and established new sample plots on all the State forest land in Garrett County. For more precise local data additional plots were measured by State crews to intensify the survey in nine counties in western and southern Maryland.

This report summarizes the timber-resource situation and the changes that have taken place since the initial survey, and points out trends that may affect future timber supplies for forest industries.

In this resurvey, some of the initial plots were remeasured to provide estimates of net annual timber growth and to update the initial forest inventory. New field plots were established for an independent second estimate. These two sets of estimates were weighted and combined to give the current estimates of forest area and timber volume.

Sampling errors, which indicate reliability, are shown for many of the new estimates. Users of these data are cautioned to read with care the definitions of terms and the section pertaining to the reliability of the estimates.

COVER PHOTO: A typical mature loblolly pine stand on the Eastern Shore.

# **The TIMBER RESOURCES of MARYLAND**

**by Roland H. Ferguson**

## **The Author**

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Big Run red pine plantation.

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## **Maryland's Timber Resource in Brief**

**F**OURTEEN years have gone by since the Northeastern Forest Experiment Station made its first forest survey of the timber resources of Maryland. During this period the total forest-land acreage within the State remained fairly stable. Total timber volume increased slightly; however, volumes for some species and species groups have changed considerably. The resurvey of Maryland, completed in 1963, showed that—



Commercial forest land amounted to 2,885,000 acres, a decrease of less than 1 percent.



Growing-stock volume (trees 5.0 inches d.b.h. and larger) added up to 2,961 million cubic feet, an increase of 4 percent.



Sawtimber volume of all species amounted to 6,823 million board feet—no appreciable change in total volume.



More than one-half (53 percent) of the sawtimber volume is in trees 15.0 inches d.b.h. and larger.



About one-half (47 percent) of the volume of hardwood sawtimber, 2,492 million board feet, is oak.



The volume of loblolly pine sawtimber decreased by 20 percent, down to 945 million board feet.



The volume of yellow-poplar sawtimber increased by 35 percent, to 1,237 million board feet.



The volume of oak sawtimber increased only slightly; now it totals 2,492 million board feet.



The volume of sweetgum sawtimber decreased by 25 percent, to 431 million board feet.



Net annual growth of growing-stock trees is about 94 million cubic feet, and the annual cut is about 74 million cubic feet.



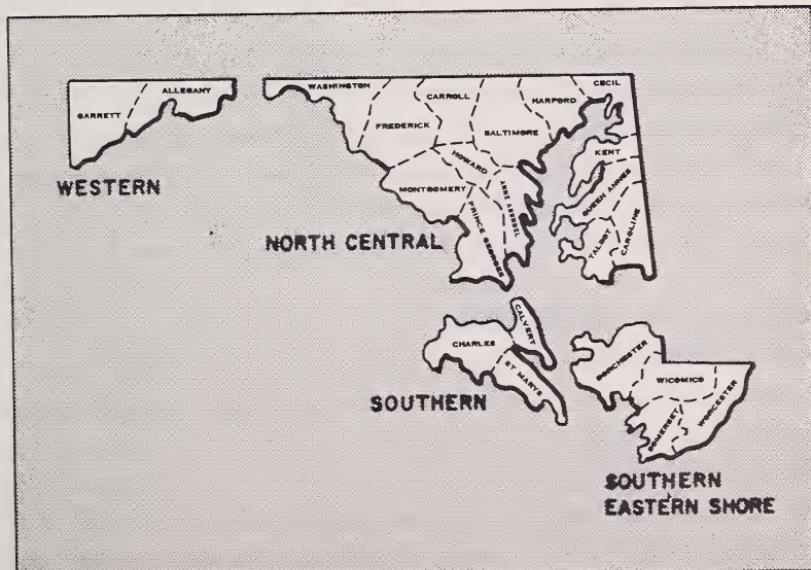
Net annual growth of sawtimber is 269 million board feet, and the annual cut is about 234 million board feet.

## Trends in the Timber Supply

MARYLAND'S commercial forest land<sup>1</sup> area of 2,885,000 acres represents 46 percent of the land area in the State. This proportion varies considerably among counties, from 30 percent in two predominantly farm counties, Carroll and Talbot, to 70 percent in the two most western counties, Allegany and Garrett. The counties with the densest population in the state—Baltimore County and the two-county area (Montgomery and Prince Georges) surrounding Washington, D.C.—still have 35 to 40 percent of their land area in commercial forest land.

A small amount of forest land (only 1 percent of the total) is classified as noncommercial. About 24,000 acres of this noncommercial forest land are unproductive because of adverse site conditions; another 19,000 acres are unproductive because of experimental ammunition contamination; and the remaining 35,000

<sup>1</sup> See appendix for definitions of this term and other terms used in this report.



The geographic units in Maryland, 1964.

acres are withdrawn from timber utilization. About 18,000 acres of this withdrawn productive forest land are in state parks, and the rest is owned by federal agencies, principally the National Park Service.

## **COMMERCIAL FOREST AREA IS ABOUT THE SAME**

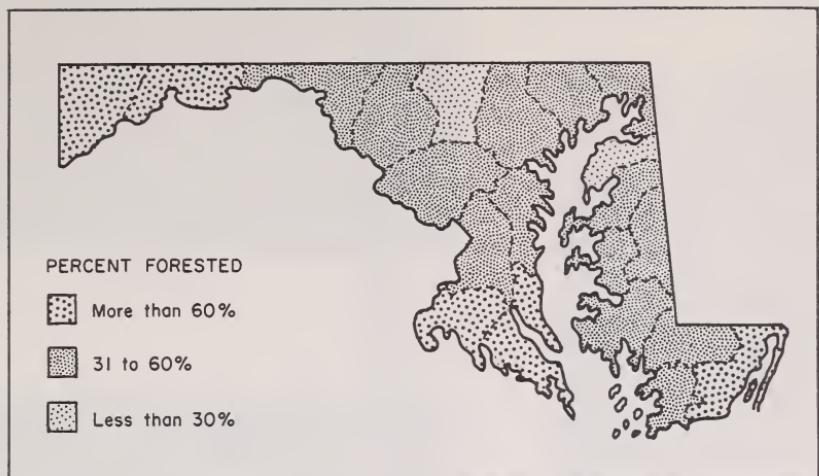
Commercial forest land in the State as a whole adds up to 2,885 thousand acres. This differs from the initial survey estimate by 12,000 acres, less than 1/2 percent. Three of the four geographic units recognized in this survey had insignificant changes in the acreage of commercial forest land. The southern unit had the largest change, a decrease of 28,600 acres (a 6-percent change). Acreage of commercial forest land and percent of change for each of the geographic units are as follows:

<i>Geographic unit</i>	<i>1950 (thousand acres)</i>	<i>1964 (thousand acres)</i>	<i>Change (percent)</i>
North-central	1,410	1,420	+0.7
Southern	463	434	-6.3
Southern Eastern Shore	545	541	-.7
Western	479	490	+2.3
State total	2,897	2,885	-.4

Individual counties showed considerably more variation in percentage of change, but most of the changes can be attributed to accuracy levels obtained in sampling. Counties in the western unit, the southern unit, and Worcester County of the southern Eastern Shore unit are the most heavily forested; more than 60 percent of their land areas is classified as commercial forest land.

## **Pattern of Ownership Has Changed**

Farmers, or operators of farms, own about one-fourth of the commercial forest land—767,000 acres. Forest industries own about 3.5 percent, or about 101,000 acres. Public agencies own 6 percent of the commercial forest land (189,000 acres), of which the State owns 144,000 acres. Municipalities own 31,000 acres, and federal agencies own 14,000 acres.



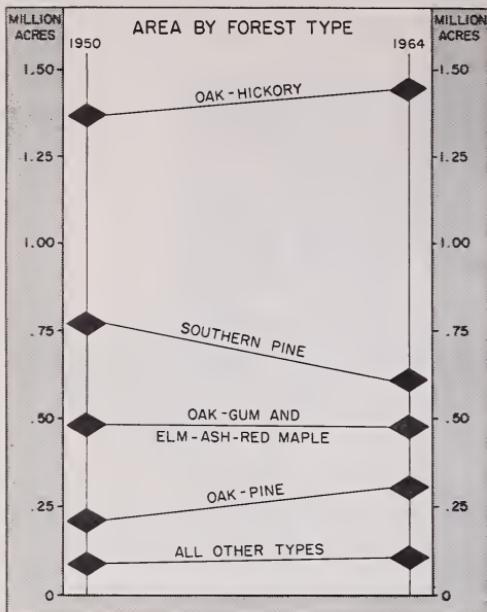
The forest cover in Maryland in 1964. Six counties in the extreme western and southern parts of Maryland are more than 60 percent forested.

Many other types of owners—such as businessmen and wage earners, professional people and sales clerks—own almost two-thirds of the commercial forest land (1,828,000 acres). Their individual holdings are not large; most of them are less than 100 acres.

Some changes took place in the pattern of ownership. The acreage of federally-owned commercial forest land in 1950 was 54,000 acres, but now the total is 13,900 acres. Several thousand acres changed from federal to private ownerships and state ownership. However, most of the change in federal ownership was due to the reclassification of some of the commercial forest land into the unproductive and reserved-productive forest land category.

State-owned commercial forest land increased from 128,000 acres to 144,000 acres primarily through the acquisition of the Wicomico State Forest, and some wildlife management areas such as Dans Mountain and Warrior Mountain in Allegany County.

Farm woodland acreage decreased by about 400,000 acres in 14 years. The 1959 U.S. Census of Agriculture showed a similar trend in the farm woodland acreage in Maryland—a decrease of 19 percent for the 9-year period between 1950 and 1959. If the



The southern-pine type decreased in area by more than 20 percent while the other types increased.

present trend of farmer-owned woodland continues, farmers soon will own less than one-fourth of the commercial forest land, and miscellaneous private ownerships will make up more than two-thirds of the total.

### **Southern-Pine Type Has Decreased**

The southern-pine type occupies about 600,000 acres (21 percent of the commercial forest-land area) and is made up chiefly of two species—loblolly pine and Virginia pine. The type also includes small amounts of pond pine, pitch pine, and shortleaf pine. Loblolly pine is particularly common in the southern countries of the Eastern Shore and extends northward to beyond the Bay Bridge. It also occurs in the lower counties of southern Maryland. Virginia pine and shortleaf pine are more widely distributed. Virginia pine often forms nearly pure stands on drier sites of the Eastern Shore and on abandoned fields.

In the southern Eastern Shore unit, the southern-pine type makes up almost one-half of the forest area (260,000 acres).

SOME LOCAL FOREST  
TYPES IN MARYLAND:



Loblolly pine.



Virginia pine  
(mature and reproduction).



Northern hardwood  
(sugar maple).



Bald cypress.



Yellow-poplar.



White oak.

The southern unit has more than one-third of its forest area in this type (157,000 acres). Although one-eighth (181,000 acres) of the forest area in the north-central unit is also in the southern-pine type, it is concentrated mostly in the six southern counties. Virginia pine is the principal species in this type within this unit.

The oak-hickory forest type makes up the largest acreage of any type. It covers 1,416,000 acres (49 percent of the commercial forest-land area of the State). Included in this type are about 350,000 acres upon which yellow-poplar is the principal species.

In the western unit, the oak-hickory forest type makes up 75 percent of the total; in the north-central unit, this type makes up 58 percent; and in the two southern units it makes up only 23 percent of the commercial forest land.

The oak-gum forest type ranks third largest (12 percent or 340,000 acres). This broad type is made up of several minor types in which sweetgum, blackgum, river birch, green ash, or swamp-oak species make up the plurality of stocking.

Oak-pine types have a 25- to 49-percent stocking of southern pines. They make up one-tenth (299,000 acres) of the forest area. All other forest types make up only 8 percent of the area—232,000 acres.

Some shifting of acreages in the major forest types occurred between surveys. The southern-pine forest type (consisting principally of loblolly, Virginia, and pitch pines) decreased by 164,000 acres, or about 22 percent. About one-half of this decrease in acreage shifted into the oak-pine type. The oak-pine type increased by 93,000 acres, and the oak-hickory type increased by 63,000 acres. Changes in acreages of other forest types were small.

The downward trend in the acreage of the southern-pine forest type will result in a further reduction of the volume of loblolly pine available for cutting.

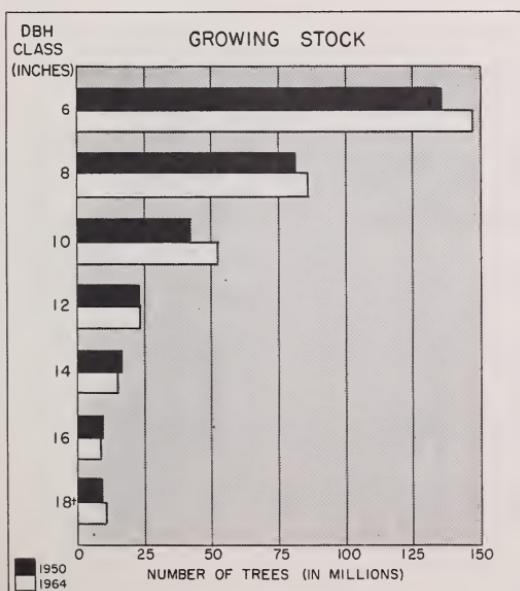
## GROWING-STOCK VOLUME IS SLIGHTLY GREATER

Although there was practically no change in total commercial forest area in Maryland between surveys, the current estimate of growing-stock volume indicates an increase in volume since the first inventory. Growing-stock volume increased to 2,961 million cubic feet, about 4 percent more than the inventory of 1950.

The number of growing-stock trees 5.0 inches d.b.h. and larger also increased between surveys by about 8 percent. Softwoods decreased by about 24 percent, but hardwoods offset this by an increase of about 24 percent. Most of the increase was in the smaller diameter classes.

Growing-stock volume increased in the western and north-central units and decreased in the southern units as indicated in the following tabulation:

<i>Geographic unit</i>	<i>Million cubic feet in—</i>	<i>Change</i>
	<i>1950</i>	<i>(percent)</i>
North-central	1,292	+15
Southern	546	-22
Southern Eastern Shore	649	-11
Western	351	+33



The number of growing-stock trees increased about 8 percent between surveys. Most of the increase was in poletimber trees.

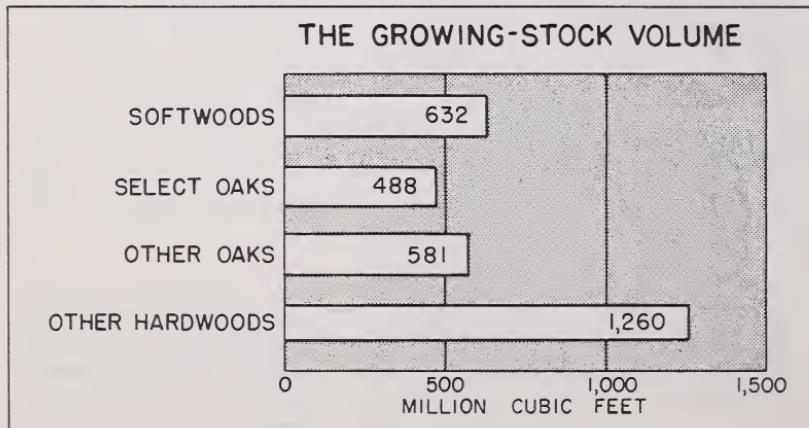
Sawtimber trees (sawlog portion and upper stem) make up 56 percent of the total live-tree volume; poletimber trees make up 38 percent; and cull trees make up 6 percent. These proportions coincide closely with those of the initial survey. The current growing-stock volume in sawtimber trees is 1,773 million cubic feet, and in poletimber trees it is 1,188 million cubic feet.

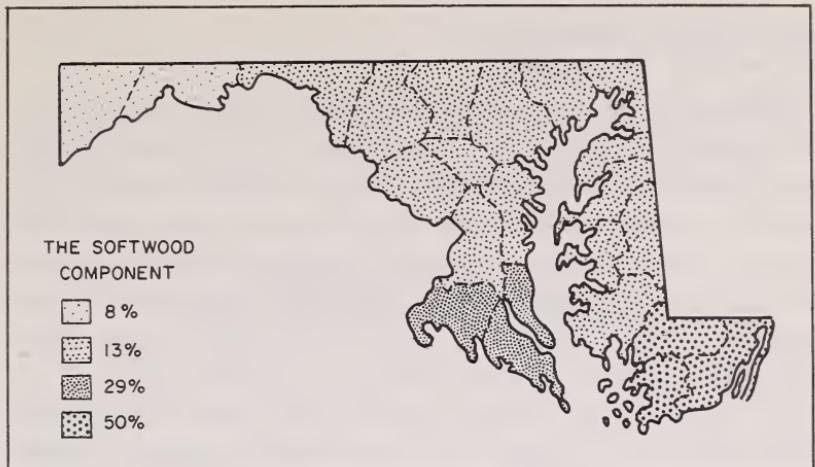
### **Oaks Predominate Over All Other Species**

Maryland's forests are predominantly hardwood. Hardwood species make up 2,329 million cubic feet, nearly four-fifths of the growing-stock volume. Oaks are the principal species; they are found throughout the State. All together they make up 46 percent of the hardwood volume, a total of 1,069 million cubic feet. Select oak species (mostly white oak and northern red oak) make up almost one-half the volume of all oaks—488 million cubic feet. All other hardwoods total 1,260 million cubic feet.

Softwood species make up only one-fifth of the growing-stock volume in the State, 632 million cubic feet. The proportion of softwood volume to the total growing-stock volume varies considerably for each geographic unit; the softwood volume ranges

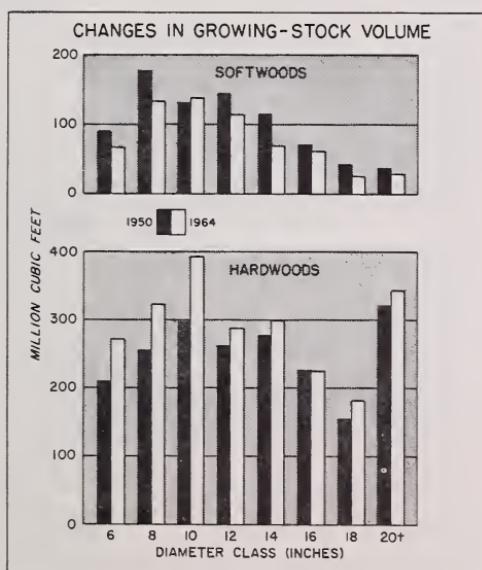
Softwoods make up one-fifth of the growing-stock volume, and hardwoods make up four-fifths.





Softwoods make up half of the volume in the South Eastern Shore geographic unit.

from 8 percent of the total volume in the western unit to 50 percent in the southern Eastern Shore unit. Two-thirds (433 million cubic feet) of the softwood growing-stock volume is in saw-timber-size trees.



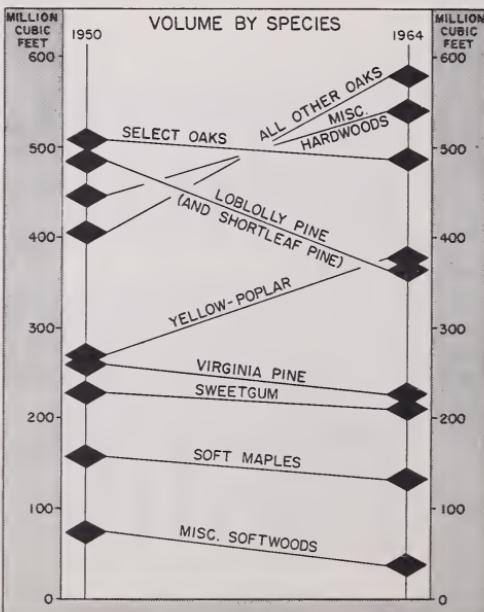
Most of the changes in volume took place in the hardwood poletimber diameter classes; total softwood volume decreased and total hardwood volume increased.

## **Hardwoods Increased — Softwoods Decreased**

Between surveys the cubic-foot volume of hardwoods increased by 15 percent, with more than two-thirds of the increase in the three poletimber diameter classes. In sharp contrast, the cubic-foot volume of softwoods decreased by 23 percent, with almost 40 percent of the decrease in the two poletimber diameter classes. For the State as a whole, there is a downward trend in the proportion of softwood volume to total growing-stock volume; softwoods now make up only 21 percent of the total volume.

Some species were cut more heavily than others; some grew more rapidly than others: so in the period between surveys volumes of some species changed considerably. Loblolly pine and yellow-poplar are the two species that had the greatest change in net cubic-foot volume. Loblolly pine decreased 25 percent, and yellow-poplar increased 40 percent.

The volume of select oak species changed only slightly between surveys. But because the volume of all hardwood species increased between surveys, the proportion of the hardwood volume



Loblolly pine and yellow-poplar are the two species with the greatest change in cubic-foot volume.

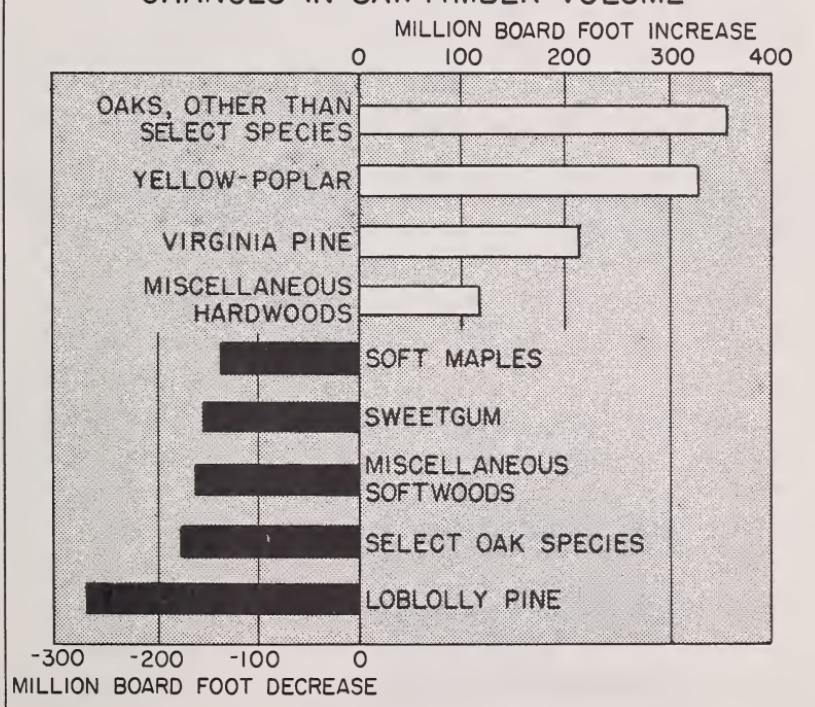
of the select oak species group changed from about one-fourth in 1950 to about one-fifth in 1964.

Sweetgum and soft maples were the only hardwood species that decreased materially in volume. Their volume decreased by about 10 percent. Volumes of all other hardwoods increased by 30 percent.

### **SAWLOG SUPPLY: NO APPRECIABLE CHANGE**

Sawtimber volume in Maryland totals 6.8 billion board feet. Although there was practically no change for the State as a whole, some changes in sawtimber volume occurred in the geographic units. Only the western unit had little change in total board-foot volume as indicated in the following tabulation:

**CHANGES IN SAWTIMBER VOLUME**

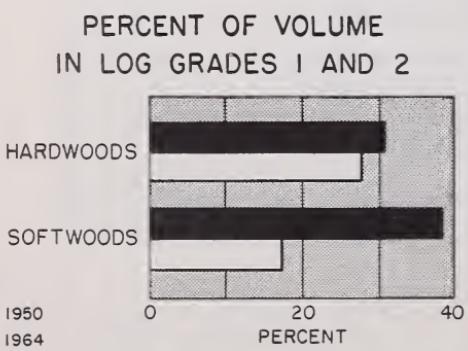


Losses in sawtimber volume for some species are offset by increases for other species.

<i>Geographic unit</i>	<i>Million board feet in—</i>	<i>Change (percent)</i>	
	1950	1964	
North-central	3,399	3,939	+16
Southern	1,319	1,091	-17
Southern Eastern Shore	1,312	1,147	-13
Western	638	646	+1

The southern pines have been cut more heavily than the hardwoods. For the State as a whole, the volume of softwoods decreased by 12 percent to the current volume of 1,507 million board feet. Hardwoods increased in volume by 7 percent, up to 5,316 million board feet. In 1950, the volume of softwoods made up 25 percent of the total board-foot volume, but by 1964 the volume of softwoods dropped down to 22 percent of the total. The reduction of southern pine volume in many stands is reflected in the change in acreage of the southern pine type into the oak-pine and oak-hickory forest types.

Within the softwood and hardwood species groups, some species increased considerably in board-foot volume while other species decreased. Virginia pine volume increased by about 70 percent, but the decrease in volume of loblolly pine and other softwoods resulted in a decrease in total volume of all softwoods. The board-foot volume of select oak species, soft maples, beech, and sweetgum decreased by about 20 percent, while the volume of other oaks, yellow-poplar, and miscellaneous hardwoods increased by about 30 percent.



Log quality has decreased between surveys.

## **Volume in Large Trees Remains the Same**

Total sawtimber volume in diameter classes 16 inches d.b.h. and larger has remained about the same between surveys. However, softwoods in this category decreased 24 percent in board-foot volume. This was offset by a 6-percent increase in hardwood board-foot volume. Softwood board-foot volume increased only in the 10-inch diameter class, and hardwood board-foot volume decreased only in the 16-inch diameter class.

## **Sawlog Quality is Declining**

The proportion of the volume in log grades 1 and 2 declined from one-third of the total graded volume in 1950 to one-fourth of the total in 1964. Total sawtimber volume (excluding that for miscellaneous softwoods) in log grades 1 and 2 decreased about 20 percent between surveys:

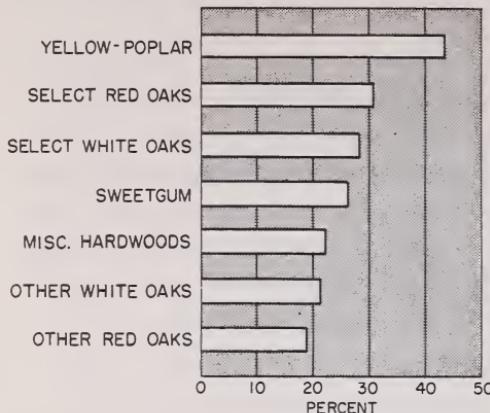
<i>Standard-lumber log grade</i>	<i>Volume in 1964 (million board feet)</i>	<i>Change from 1950 (percent)</i>
1	561	-21
2	1,141	-19
Other	5,063	+17

Timber quality for hardwoods as a group has changed little between surveys. The volume in standard-lumber logs of grades 1 and 2 decreased about 5 percent. In 1950 the board-foot volume of hardwoods in these better grades made up 31 percent of the total hardwood volume, but by 1964 the proportion had dropped to 27 percent.

Softwood timber quality (southern pine) declined drastically. The volume of pine that met grade 1 specifications dropped by more than two-thirds, and the volume that met grade 2 specifications dropped by more than one-half. These large decreases were due to the big reduction in softwood board-foot volume in the larger diameter classes. Volume in 14-inch d.b.h. and larger trees decreased by about 30 percent.

The quality of some individual hardwood species and groups of hardwoods varied considerably from the average for all hardwoods. The proportions of grades 1 and 2 volume in 1964 ranged

### PROPORTION OF VOLUME IN GRADES 1 AND 2



Yellow-poplar sawtimber trees have a larger proportion of the volume in the better log grades than any other species.

from a low of 18 percent for the other-red-oaks group to a high of 42 percent for yellow-poplar.

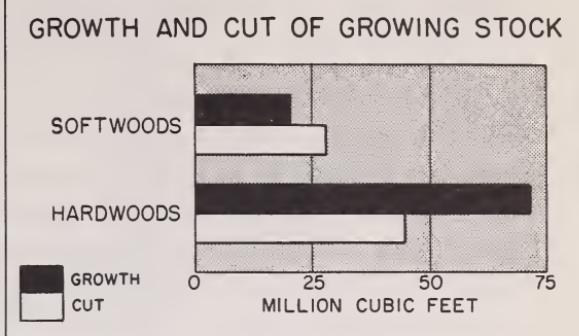
Between surveys, the quality of some hardwood species did not change. Other hardwood species had considerable change. For example, yellow-poplar had the greatest increase in the proportion of high-quality log volume—from 25 percent of the yellow-poplar total in 1950 to 42 percent of the total in 1964. Offsetting this increase, the proportion for the select oak species group decreased from 36 percent of the select oak volume to 28 percent.

### THE GROWTH-CUT RELATIONSHIPS

Net annual growth of all growing stock is almost 94 million cubic feet, and the annual timber cut is about 74 million cubic feet, an apparent excess of 20 million cubic feet of growth over cut. The net annual growth is equivalent to 32 cubic feet per acre of commercial forest land, which indicates that the forest land is growing wood at less than its capacity.

Estimates of net annual growth for the initial survey show that the growth of growing stock (accretion) made up approximately three-fourths of total gross growth. On the resurvey, this proportion dropped to about one-half. Loss of tree volume due to change in tree classification from merchantable to unmerchantable was

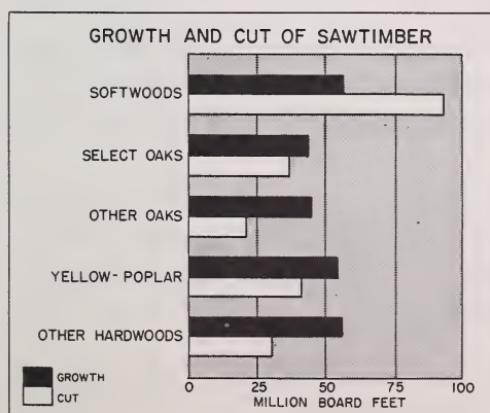
Growing-stock growth exceeds annual cut.



partially responsible for this reduction. About one-eighth of the gross annual growth is lost, due to mortality. Summing up, the volume (in millions of cubic feet) for components of net annual growth are:

Growth on growing stock	56.6
Ingrowth into poletimber	+50.9
<hr/>	<hr/>
Gross annual growth	107.5
Annual mortality	—13.8
<hr/>	<hr/>
Net annual growth	93.7

The reader is cautioned to recognize the sampling errors for the inventory estimate and the growth estimate when he compares the inventory change between surveys with the estimated growth. When sampling accuracy is considered, the inventory change and the growth-cut relationship are in balance.



Softwood timber growth needs to be increased.

## **Softwoods are Overcut**

Softwood species are cut more heavily than hardwoods; the 28 million cubic-foot cut exceeds growth by about 8 million cubic feet (38 percent). Few of the hardwood species are overcut, and some are growing at a rate that is more than double the rate of cut. The hardwoods as a group are growing at a rate of 73 million cubic feet a year, and the annual cut is only 46 million cubic feet (about two-thirds the growth).

The net annual growth of sawtimber (269 million board feet) exceeds the annual cut (233 million board feet), but the excess is only in the hardwood species. At the time of the initial survey, the softwood sawtimber cutting rate was one and a half times that of growth. The heavy overcutting of softwoods greatly reduced the inventory of softwood sawtimber volume. Softwood sawtimber is now being overcut by about 60 percent, and this will further reduce the softwood inventory volume.

Net annual growth and cut are about in balance for the select oak species group. The cut of yellow-poplar could be increased by about 30 percent without exceeding the annual growth. The annual cut of all other hardwoods could be about double the current cut and not exceed the board-foot net annual growth.

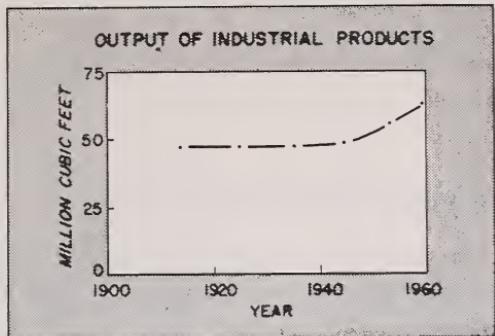
## **Trends in Timber Use**

Forest industries in 1963 produced 70 million cubic feet of timber products from the timber resources in Maryland. Nine-tenths of the output came from roundwood, and the other tenth came from plant byproducts. Sixty percent of the total production was from hardwood species, a larger proportion of hardwoods than in 1952.

The output of industrial products, which includes all timber products except fuelwood, has increased during the past 50 years. The first comprehensive estimate for industrial products was 47 million cubic feet in 1914.<sup>2</sup> Output estimates for 1938 and 1941

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<sup>2</sup> Besley, F. W. THE FORESTS OF MARYLAND. Md. State Bd. Forestry, 152 pp., illus. 1916.



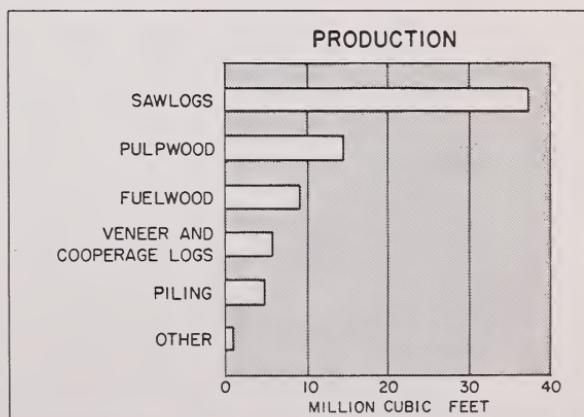
Output of timber products is increasing.

were reported in units of board feet, cords, and numbers.<sup>3</sup> If the 1941 volumes and numbers were converted to cubic feet, the estimates would total about 46 million cubic feet. After 1941, the output of industrial products began an upward trend, with 53 million cubic feet in 1952 and 62 million cubic feet in 1963.

Sawlogs continued to be the major product. They accounted for 52 percent of the total cubic-foot output. Pulpwood ranked second in the volume of output in 1963, exchanging places with fuelwood, which ranged second in 1952. Pulpwood output doubled between surveys, and fuelwood output decreased about 60 percent. Mine timbers, which ranged fourth (3 percent of the total) in

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<sup>3</sup> Burns, F. MARYLAND FORESTS AND FORESTRY. Md. Bd. Natural Resources, 56 pp., illus. 1948.



Sawlogs made up more than half of the 1963 output of timber products.

1952, accounted for negligible volume in 1963. The output of veneer logs and bolts, cooperage logs and bolts, and piling has more than doubled since 1952. Now they make up about 14 percent of the timber-products output.

## LUMBER PRODUCTION IS AT HIGH LEVEL

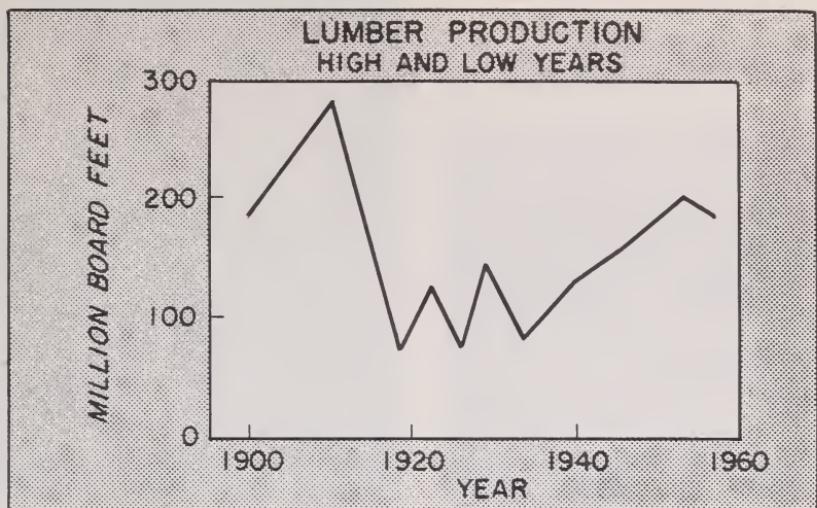
Lumber production in Maryland has averaged more than 100 million board feet a year since 1869, the earliest date for which production records or estimates were compiled.<sup>4</sup> Production dipped to its lowest points in 1917 (68 million board feet), 1928 (69 million board feet), and 1933 (80 million board feet). The peak of lumber production was reached in 1909 when 268 million board feet were produced. Since 1933 the trend of lumber production has been generally upward. It increased to 205 million board feet in 1952, but dropped slightly to 190 million board feet in 1963.

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<sup>4</sup> Steer, H. B. LUMBER PRODUCTION IN THE U. S., 1799-1946. U. S. Dep. Agr. Misc. Pub. 669, 233 pp. 1948.

Log and lumber yard of sawmill in Harco, Md.



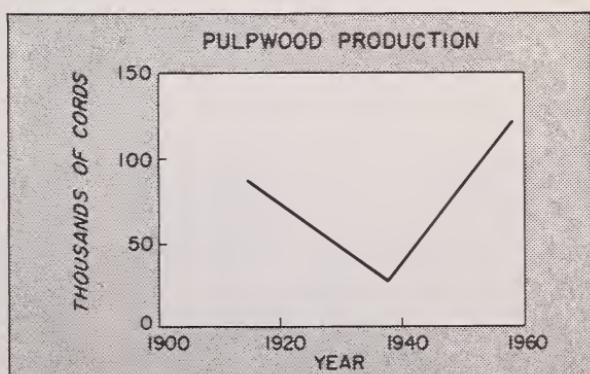


Lumber production has remained high in recent years.

### **PULPWOOD PRODUCTION IS INCREASING**

Pulpwood production is increasing in volume and importance. However, past production data are limited. The earliest estimate is for 1914 when 74,000 long cords (92,000 standard cords) was reported.<sup>2</sup> Another estimate was made for 1938, at which time 31,000 standard cords of pulpwood was produced.<sup>3</sup> At the time of the initial forest survey, pulpwood production was back to 92,000 cords. The trend has continued upward to 138,000 cords in 1963. This latter figure does not include 46,000 cords from plant byproducts.

Production of pulpwood has increased sharply since 1938.



**SOME OTHER PRODUCTS  
FROM MARYLAND'S FORESTS:**



Photo Credit: Ken Ferguson

Poles and piling  
ready for loading.

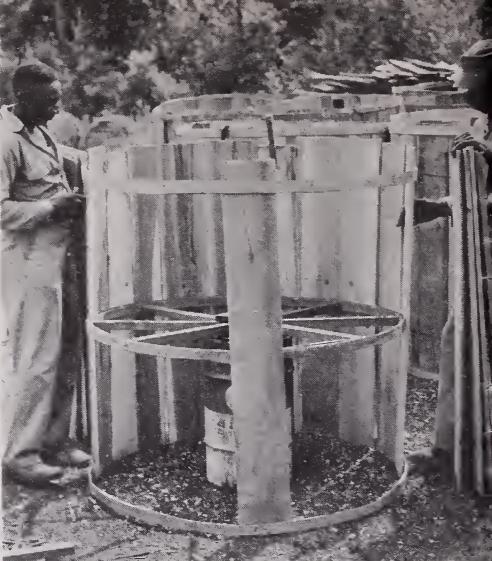


Photo Credit: M. E. Wa

Tobacco hogshead assembly.

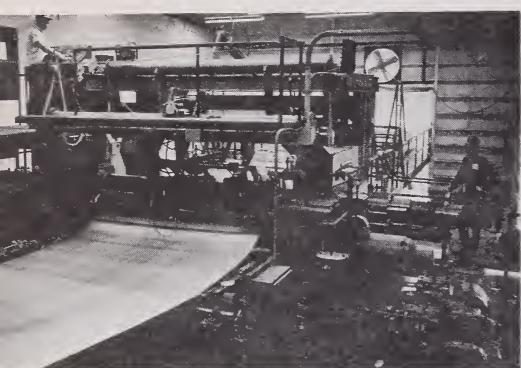


Photo credit: U. S. Plywood Corporation

Veneer from southern  
pine, Pocomoke City, Md.



Pulpwood chips being loaded  
for market, Snow Hill, Md.

Stockpile of Sweetgum spoon bolts.



Sweetgum shredded bark mulch.



## **Timber-Supply Outlook**

The general outlook is for little change in the total area of commercial forest land in Maryland upon which timber can be grown. Forest areas that have been removed from timber production for urban development, rights of way, or other nonforest use have been offset by areas of abandoned farmland and pastures that reverted back to forest use.

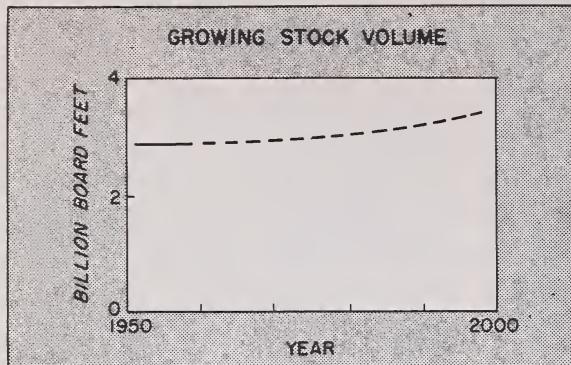
The availability of inventory volume data from two forest surveys in Maryland provides an opportunity for analyzing the timber situation and the trends suggested by the real changes between inventories. Furthermore, with the trend information as a guide, projections of the timber situation to specified years are possible.

The development of a computer program that can be used to project present inventory volume, timber cut, annual growth, and mortality estimates to any specified year in the future has aided considerably in predicting the future of Maryland's timber resource. This program (timber resource analysis system) makes possible stand-table projections based on annual growth rates, and we can convert the stand table to a stocking table by using appropriate tree volumes. The program handles estimated timber cut by one of several options specified for the anticipated situation.

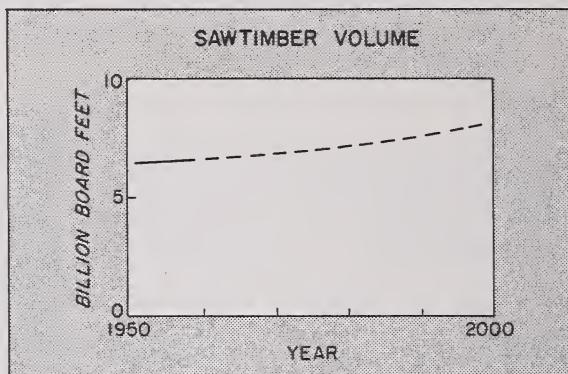
In Maryland, the estimates based upon remeasured plots reveal that softwood cut exceeds growth and that hardwood cut was only about 60 percent of the growth. Other data also reveal that the annual hardwood cut has been increasing.

Based on the past trend of hardwood cutting and indications that this situation would not materially change, the 1963 hardwood inventory was projected for 30 years, using a given cut per acre per year (table 34). The cut per acre for the projection period was increased at the same rate as it had been increasing in the past.

Softwoods presented a different situation. Although the present annual cut exceeds growth, it is apparent that the timber owners and users in the State wish to modify this situation to prevent further drastic reduction of the softwood inventory. On this basis, the 1963 softwood inventory was projected, using the timber cut



**Growing-stock volume will gradually increase for the next 30 years.**



**Sawtimber volume will increase more rapidly in the future.**

option that would bring cut and growth into balance by the end of the 30-year projection period.

What do the trend analysis and the projections indicate for Maryland forests?

Looking ahead 30 years, we expect that the growing-stock inventory volume will be 3,290 million cubic feet, an increase of about 11 percent. In 1964 softwoods made up 21 percent of the total cubic-foot volume, but by 1994 softwoods will make up only 11 percent. By 1994 the assumed cut and net annual growth for softwoods will be about in balance at 13 million cubic feet a year, and the annual cut for hardwoods will be about 30 percent less than the net annual growth.

Sawtimber volume will have a similar trend over the same period of time. Board-foot volume will increase about 19 percent,

to about 8,110 million board feet in 1994. At that time the annual growth and timber cut of softwoods will be about equal—approximately 30 million board feet. In 1964 the average sawtimber volume per acre was 2,360 board feet. If we assume that there will be no decrease in commercial forest-land area and no increase in acreage under forest management, the average volume per acre will increase to about 2,800 board feet in 1994.

Although the overall volume changes are not large, the changes for some individual species are unfavorable. Loblolly pine, for example, an important species in the southern and eastern counties of Maryland, is one of the most heavily cut in relation to its inventory volume. The volume of loblolly pine dropped to 945 million board feet in 1964, a decrease of 21 percent. If this downward trend continues, the inventory of loblolly pine in 1994 will be about half of what it was in 1964.

Similarly, some hardwood species (such as red maple, sweet-gum, white oak, and northern red oak) are being cut at a much faster rate than they are growing. Unless a considerably larger acreage of privately owned forest land is put under some kind of management to favor the more valuable species of hardwood trees, the composition of the timber stands in Maryland will change to a larger percentage of the less desirable and unwanted species.

In summary, the growing-stock volume in Maryland will continue to increase annually during the next 30 years; however, this increase will be at a continually decreasing rate.

## **Management Opportunities**

Net annual growth of timber on commercial forest land in Maryland is much less than its potential. In 1948 it was estimated that the forest land was producing 29 cubic feet per acre annually, and that under good management it was capable of producing about 70 cubic feet.<sup>3</sup> In 1964, net annual growth was calculated to be 32 cubic feet per acre, still much below what is possible.

The density of stocking exerts considerable influence upon the rate of growth. Only about one-half of the commercial forest land

in 1964 was well stocked (70 percent or more) with growing-stock trees. Almost 10 percent of the forest land was poorly stocked and nonstocked (less than 40 percent stocked). An increase in the density of stocking would result in an increase in volume-per-acre growth.

Even more important than the stocking of growing-stock trees are the stocking of desirable trees and the presence of little or no inhibiting vegetation, adequate seed sources, and favorable seedbed conditions. A little more than 2 percent of the commercial forest land is stocked 70 percent or more with desirable trees. Mature stands in this area-condition class require no treatment, but immature stands may need thinning. Another 2 percent will become stocked 70 percent or more with desirable trees in time because there are adequate seed sources, favorable seedbed conditions, and no inhibiting vegetation.

Therefore there is an opportunity to increase the stocking of desirable trees on about 95 percent of the commercial forest-land area through timber-stand improvement and area treatment. This forest area is controlled by other than desirable trees or inhibiting vegetation, or may lack adequate seed sources, or may have seedbeds unfavorable to natural regeneration.

The loblolly-shortleaf pine forest type, in 1950, occupied about 400,000 acres in southeastern Maryland. By 1964 this acreage decreased to about 300,000 acres, a loss of 100,000 acres that reverted to the oak-pine or hardwood forest types. Loblolly pine is one of the more desirable species, and within its natural range in southeastern Maryland, there is an opportunity to increase its acreage and volume.

Many landowners in eastern Maryland have undertaken to establish or favor stands of loblolly pine—often under the guidance of State foresters; or in the case of some industrial holdings, under the supervision of company foresters. The measures used have varied widely because they were adapted to specific conditions. The following treatments have been used alone or in some combination: the application of herbicides to individual trees or the use of mistblowers on the foliage of understory trees and shrubs; prescribed burning, disk ing, or bulldozing to reduce hard-



Land preparation for planting to loblolly pine.

Planting of loblolly pine.





Three-year-old red pine plantation as part of a farm.

wood competition and improve conditions for pine establishment; and planting. Since 1950, in the lower six Eastern Shore counties about 40,000 acres of timberland have received some kind of timber-stand improvement.

Opportunities and objectives in managing Maryland's forests vary widely. In the Washington-Annapolis-Baltimore area population growth is expected to further reduce the scattered areas of woodland. Throughout Maryland, but especially near the population centers and on the relatively poor sites of western Maryland, recreation is becoming a major objective in woodland management. Only on the lower Eastern Shore is ownership by wood-using firms an important part of the land-ownership pattern. These firms are doing much to increase the quality of timber growth on their lands. Elsewhere the small timberland owners may be stimulated to undertake stand-improvement treatments since desirable species and high-quality trees are aesthetically pleasing and offer financial returns to help meet carrying charges on the land.

Farmers and other individuals in many kinds of occupations own 90 percent of the commercial forest land, but the management of their woodlands for the highest possible timber yield is not the primary interest of most of them. Nevertheless, from their lands comes most of the timber that is cut each year. If timber growth is to be increased, it will be mainly through management activities of the private forest landowner. The Maryland Department of Forests and Parks through its district foresters offers technical assistance to all those interested in improving their forest woodland and timber stands.

# Appendix

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## DEFINITIONS OF TERMS

### *Forest Area*

*Forest land area.*—This includes: (a) lands that are at least 10 percent stocked with trees of any size and are capable of producing timber or other wood products, or of exerting an influence on the climate or on the water regime; (b) land from which the trees described in (a) have been removed to less than 10 percent stocking and that has not been developed for other use; and (c) afforested areas. (Forest tracts of less than 1 acre, isolated strips of timber less than 120 feet wide, and abandoned fields and pastures not yet 10 percent stocked with trees are excluded.)

*Commercial forest land area.*—Forest land that is (a) producing, or physically capable of producing, crops of industrial wood (usually sawtimber); (b) economically available now or prospectively; and (c) not withdrawn from timber utilization through statute, ordinance, or administrative order.

*Noncommercial forest land area.*—Forest land that is (a) withdrawn from timber utilization through statute, ordinance, or administrative order, but that otherwise qualifies as commercial forest land; or (b) incapable of yielding industrial wood products (usually sawtimber) because of adverse site conditions.

### *Timber Volume*

*Growing stock.*—Net volume, in cubic feet, of live sawtimber and poletimber trees (see definitions under "Class of Timber") from stump to a minimum 4-inch top (of central stem) outside bark. Net volume equals gross volume less deduction for rot.

*Sawtimber volume.*—Net volume in board feet, International  $\frac{1}{4}$ -inch rule, of merchantable sawlogs in live sawtimber trees. Net volume equals gross volume less deductions for rot, sweep, and other defects that affect use for lumber.

*Standard cord.*—A unit of measure for stacked wood encompassing 128 cubic feet of wood, bark, and air space. Cord estimates can be derived from cubic-foot estimates by applying a factor of 80 cubic feet of wood (inside bark) per rough cord.

### *Tree Classes*

*All trees.*—All live sawtimber and poletimber trees, seedlings and saplings, and all live cull trees.

*Growing-stock trees.*—All live sawtimber trees, poletimber trees, and seedlings and saplings, except cull trees. (See definitions under "Class of Timber.")

*Desirable trees.*—All growing-stock trees that now or prospectively have positive stumpage value (primarily for lumber production) and are most likely to remain in the stand for at least 10 years if not cut or otherwise deliberately killed.

Sawtimber trees are considered to have positive stumpage value now if they have a grade 1 or 2 butt log. Exceptions are made for several species that can have a lower quality butt log.

Poletimber trees are considered to have positive stumpage value if they will meet the above sawtimber tree requirements before becoming mature.

### *Stocking Classes*

Stocking is a measure of the utilization of available growing space. The eastern standard of 75 square feet of basal area per acre is based upon a wedge-prism (BAF-37.5) tally of two growing-stock trees, 5.0 inches d.b.h. and larger, and their equivalent in smaller-size saplings and seedlings at each point. The stocking percentage for a sample plot is derived from the stocking of each of the ten points. Three categories of stocking are used:

*All live trees.*—These are used in the classification of forest land and forest types.

*Growing-stock trees.*—These are used in the classification of stand-size classes.

*Desirable trees.*—These are used in the classification of area-condition classes.

### *Stand-Size Classes*

*Stand.*—A growth of trees on a minimum of 1 acre of forest land that is at least 10 percent stocked by forest trees of any size.

*Sawtimber stands.*—Stands that are at least 10 percent stocked with growing-stock trees and have half or more of this stocking in sawtimber and poletimber trees, and with sawtimber stocking at least equal to poletimber stocking.

*Poletimber stands.*—Stands that are at least 10 percent stocked with growing-stock trees and have half or more of this stocking in sawtimber and poletimber trees, and with poletimber stocking exceeding that of sawtimber stocking.

*Sapling-and-seedling stands.*—Stands that are at least 10 percent stocked with growing-stock trees and in which saplings and/or seedlings make up a plurality of this stocking.

*Nonstocked areas.*—Commercial forest lands that are less than 10 percent stocked with growing-stock trees.

### *Area-Condition Classes*

*Class 1.*—Areas that are stocked 70 percent or more with desirable trees.

*Class 2.*—Areas that are stocked 40 to 70 percent with desirable trees and in which 30 percent or less of the area is controlled by other trees and/or inhibiting vegetation or surface conditions that will prevent occupancy by desirable trees.

*Class 3.*—Areas that are stocked 40 to 70 percent with desirable trees and in which more than 30 percent of the area is controlled by other trees and/or inhibiting vegetation or surface conditions that will prevent occupancy by desirable trees.

*Class 4.*—Areas that are stocked less than 40 percent with desirable trees and have adequate seed sources and seedbeds favorable to natural restocking.

*Class 5.*—Areas that are stocked less than 40 percent with desirable trees and have inadequate seed sources and/or seedbeds unfavorable to natural regeneration.

### *Forest Cover Types*

The forest-type classification of each sample plot is based upon the majority of stocking by all live trees of various species. When no indicator species makes up a majority, the forest type is determined on the basis of plurality of stocking.

*Loblolly-shortleaf pine.*—Forests in which 50 percent or more of the stand is loblolly pine, shortleaf pine, or other southern yellow pines, singly or in combination. In Maryland pitch pine and Virginia pine predominates on almost one-half of the area in this type.

*Oak-pine.*—Forests in which 50 percent or more of the stand is hardwood, usually upland oaks, but in which southern pines make up 25-49 percent of the stand.

*Oak-hickory.*—Forests in which 50 percent or more of the stand is upland oaks or hickory, singly or in combination, except where pines comprise 25-49 percent, in which case the stand would be classified oak-pine. In Maryland, it includes the yellow-poplar-oak forest type.

*Oak-gum-cypress.*—Bottomland forests in which 50 percent or more of the stand is blackgum, sweetgum, or oaks, singly or in combination, except where pines comprise 25-49 percent, in which case the stand would be classified as oak-pine.

*Minor types in Maryland.*—White pine type, spruce type, elm-ash-red maple type, maple-beech type, and aspen type are forests in which 50 percent or more of the stand is in the named species, singly or in combination.

### *Class of Timber*

*Sawtimber trees.*—Trees of commercial species that: (a) are of the following minimum diameters at breast height—softwoods 9.0 inches and hardwoods 11.0 inches; and (b) contain at least one merchantable sawlog. (A merchantable sawlog is a portion of a live tree that meets the minimum log-grade specifications, as defined under log-grade classification. The sawlog portion is that part of the tree between the stump and the top of the last merchantable sawlog.)

*Poletimber trees.*—Trees of commercial species that meet regional specifications of soundness and form, and are of the following diameters at breast height; softwoods 5.0 to 9.0 inches; hardwoods 5.0 to 11.0 inches. Such trees will usually become sawtimber trees if left to grow.

*Sapling-and-seedling trees.*—Trees of commercial species that are less than 5.0 inches in diameter at breast height and of good form and vigor.

MARYLAND  
FOREST COVER TYPES

- LOBLOLLY SHORTLEAF PINE
- OAK - PINE
- OAK - HICKORY
- OAK - GUM - CYPRESS
- MAPLE - BEECH - BIRCH
- NONFOREST

0      40  
MILES



The major forest cover types in Maryland.

*Cull trees.*—Live trees of sawtimber or poletimber size that are unmerchantable for sawlogs now or prospectively because of defect or rot, or because they are of noncommercial species.

### *Log Grades*

The standard-lumber log grades for hardwoods and the yellow pines used in the resurvey of Maryland are outlined in the figures below.

#### YELLOW PINE LOGS

<i>Grade</i>	<i>Diameter (in inches, inside bark)</i>	<i>Length (feet)</i>	<i>Surface requirements</i>
1	10-16	8+	Surface clear (not considering adventitious knots or branches).
	16+	8+	Not more than three 2- to 4-inch knots and any number of smaller knots.
2	8-9	8+	Surface clear.
	10-13	8+	Any number of small knots (less than 2 inches in diameter).
	14+	8+	Not more than six 2- or 4-inch knots and any number of smaller knots.
3	6-7	8+	Any number of small knots not exceeding 1-inch in diameter.
	8-13	8+	Not more than six 2- to 4-inch knots and any number of smaller knots.
	14+	8+	More than six 2- to 4-inch knots. Any log with one or more knots 5 inches or larger.
	Knotty or crooked merchantable logs 8 inches d.i.b. or larger and 10 feet in length or longer that do not fall in either Grade 1 or Grade 2.		

The grade standards used for yellow-pine logs in the forest survey of Maryland.

# HARDWOOD STANDARD-LUMBER LOGS

Grade Factors*		Specifications						
		Log grade 1		Log grade 2		Log grade 3		
Position in tree		Butts only	Butts & uppers	Butts & uppers			Butts & uppers	
Minimum diameter (inches)		<sup>1</sup> 13-15	16-19 20+	<sup>2</sup> 11	12+			8+
Minimum length (feet)		10+	10+ 10+	10+	8-9	10-11	12+	8+
Clear** cuttings on each of the 3 best faces	Min. length (feet)	7	5 3	3	3	3	3	2
	Max. number	2	2 2	2	2	2	3	—
	Min. yield face length	5/6	5/6 5/6	2/3	3/4	2/3	2/3	1/2
Max. sweep and crook allowance; % of gross vol.		15		30			50	
Max. cull and sweep allowance; % of gross vol.		<sup>3</sup> 40		<sup>4</sup> 50			50	

\* End defects, although not visible in standing trees, are important in grading cut logs. Instructions for dealing with this factor are contained in U.S. Forest Prod. Lab. Rpt. D1737.

\*\* A clear cutting is a portion of a face free of defects, extending the width of the face. A face is one-fourth the surface of the log as divided lengthwise.

<sup>1</sup> Ash and basswood butts can be 12 inches if otherwise meeting the requirements for small No. 1's.

<sup>2</sup> 10-inch logs of all species can be No. 2 if otherwise meeting the requirements for small No. 1's.

<sup>3</sup> Otherwise No. 1 logs with 41-50 percent cull can be No. 2.

<sup>4</sup> Otherwise No. 2 logs with 51-60 percent cull can be No. 3.

The specifications used in the forest survey of Maryland for hardwood standard-lumber logs, based on U.S. Forest Products Laboratory studies.

# HARDWOOD TIE-AND-TIMBER LOGS

<i>Grade Factors</i>		<i>Specifications</i>
Position in tree		Butts and uppers
Scaling diameter (inches)		8+
Length, without trim (feet)		8+
Clear cuttings		No requirements. Not graded on cutting basis.
Max. sweep allowance		One-fourth d.i.b. of small end for half logs, and one-half d.i.b. for logs 16 feet long.
Sound surface defects permitted	Single knots	Any number, if none has an average collar* diameter that is more than one-third of log diameter at point of occurrence.
	Whorled knots	Any number, provided the sum of the collar diameters does not exceed one-third the log diameter at point of occurrence.
	Holes	Any number not exceeding knot specifications if they do not extend more than 3 inches into the contained tie or timber.
Unsound** surface defects permitted		Any number and size if they do not extend into contained tie or timber. If they extend into contained tie or timber, they shall not exceed size, number, and depth of limits for sound defects.

\* Knot collar is the average of the vertical and horizontal diameters of the limb or knot swelling as measured flush with the surface of the log.

\*\* Interior defects are not visible in standing trees. They are considered in grading cut logs. No interior defects are permitted except one shake not more than one-third the width of the contained tie or timber, and one split not more than 5 inches long.

**The timber-grading specifications used for hardwood tie and construction timber.**

## *Annual Growth and Cut*

*Net annual growth of sawtimber.*—The annual change (resulting from natural causes) in net board-foot volume of live sawtimber on commercial forest land during the period between surveys.

*Ingrowth of sawtimber.*—The net board-foot volume of trees that first became sawtimber trees during the inventory year as measured at the end of the year.

*Annual mortality of sawtimber.*—The net board-foot volume removed yearly from live sawtimber on commercial forest land through death from natural causes.

*Annual cut of live sawtimber.*—The net board-foot volume of live sawtimber trees cut or killed in logging, land-clearing, or cultural operations on commercial forest land during a year.

*Net annual growth of growing stock.*—The annual change (resulting from natural causes) in net cubic-foot volume of live sawtimber and poletimber trees on commercial forest land.

*Ingrowth of growing stock.*—The total net cubic-foot volume of trees that first become a part of growing stock during the inventory year as measured at the end of the year.

*Annual mortality of growing stock.*—The net cubic-foot volume removed yearly from growing stock through death from natural causes.

*Annual cut of growing stock.*—The net cubic-foot volume of live sawtimber and poletimber trees cut or killed in logging, land-clearing, or cultural operations on commercial forest land during a year.

## FOREST-SURVEY METHODS

Forest-area and timber-volume estimates are based upon information obtained from two sets of aerial photographs (10 or more years between the two) and sample photo plots and ground plots. Photo plots were pin-pointed on each set of aerial photographs so they were distributed uniformly over the entire State. Each photo plot was classified as either forest or nonforest, and each forest plot was classified into sampling strata. These strata were stand-size classes on the initial survey and were cubic-foot-volume-per-acre classes on the resurvey.

Field crews on the first survey inspected on the ground many sample plots selected from the photo plots. Area, volume, and growth data were recorded. These data were the basis for *The Timber Resource in Maryland* report published in 1955.

A sample of 185 of the initial ground plots were visited on the resurvey. Plot centers were relocated, and trees were retallied. The two tallies were reconciled with each other on the plot.

Data from the remeasured plots were used to obtain the first part of a combined estimate of current forest area and timber volume, and estimates of net annual growth, mortality, and timber cut. Regression equations calculated from the remeasured plots brought up to date the volume estimates of the first survey.

On the initial survey, each sawtimber tree was measured for d.b.h., merchantable sawlog height, and number of bolts in the upper stem. These measurements were used with appropriate volume tables for estimating each tree's volume in cubic feet and board feet. On the resurvey, the number of upper-stem bolts were recorded for sawtimber trees on only the remeasured plots. Data from the remeasured plots were developed into gross cubic-foot-volume equations from which volume per tree was obtained. Ratios were used to obtain board-foot volumes.

In addition to the remeasured plots, 535 new ground plots selected from photo plots on the most recent aerial photographs were established. They were selected at random within cubic-foot-volume classes. The data

for the photo plots and ground plots based upon the most recent aerial photography were used to obtain the second part of the combined estimates for area and volume.

These two sets of estimates were weighted by their variance reciprocals and combined. This combined result gave the new estimate in acres for each forest area breakdown shown in the tables of this report. The associated sampling errors for these breakdowns were also obtained. The new estimates of timber volumes were produced in the same way.

Estimates of net annual growth, mortality, and timber cut were based entirely upon the 185 remeasured plots. The volume of growing stock on the plots at the time of remeasurement (consisting of both live growing-stock trees and trees that were cut), minus the volume of growing-stock trees on the plots at the time of the first survey, equals net volume growth for the years between measurement.

Stump measurements were used to estimate volumes of cut trees. Measurement of dead trees that were initially classified as live growing-stock trees provided the estimates of mortality.

These estimates for the period between surveys were converted to net annual growth, mortality, and timber cut by dividing by the number of years between measurements for each plot.

Estimates of timber volumes for 1950 were recomputed for more reliable estimates of changes between surveys. The differences between reported and computed volumes for 1950 do not reflect real changes but are the result of differences in volume tables, field interpretations of growing stock, height measurements, and technique errors. The recomputed volume estimates instead of those shown in the 1950 timber resource report were used whenever differences between the two surveys were discussed.

## RELIABILITY OF THE ESTIMATES

The forest-area and timber-volume data presented in this report are based on a carefully designed sample of forest conditions throughout Maryland. However, since neither every acre nor every tree in the State was measured, the figures in this report are at best estimates. A measure of the reliability of these estimates is given by a sampling error. Each estimate in this report had a computed sampling error. Included with the statistical tables are the corresponding sampling errors for row totals and column totals.

Briefly, here is how the sampling error indicates reliability. Our report of the total commercial forest area in Maryland, 2,885,000 acres, has an associated sampling error of 1.8 percent (52,000 acres). This means that our best estimates of the commercial forest area in 1964 is 2,885,000 acres. And if there are no errors in procedure, the odds are 2 to 1 that if we repeated the resurvey, the new estimate of commercial forest area would be between 2,833,000 and 2,937,000 acres ( $2,885,000 \pm 52,000$ ). Similarly, the odds are 19 to 1 that it would be within  $\pm 104,000$  acres of the present estimate, and 300 to 1 that it would be within  $\pm 156,000$  acres.

The computed sampling error is not a complete measure of reliability; there are other sources of error that this term does not include. There

could be imperfections in our volume tables and errors in field measurement. Procedural errors were kept to a minimum by careful training of all personnel, frequent inspection of field work, and application of the most reliable survey methods.

Computed sampling errors for the totals shown in the statistical tables are:

	Sampling error (percent)
Commercial forest area (2.9 million acres)	1.8
1.0 million acres	3.0
Growing-stock volume (3.0 billion cubic feet)	3.1
1.0 billion cubic feet	5.4
Sawtimber volume (6.8 billion board feet)	4.0
Net annual growth (94 million cubic feet)	29.0
1.0 billion cubic feet	8.9
Annual timber cut (74 million cubic feet)	13.0
1.0 billion cubic feet	3.5

## SPECIES TALLIED

Only the commercial trees species<sup>5</sup> found on forest survey sample plots in Maryland are listed below. Other species that are found in Maryland are not included.

### Softwoods

Loblolly pine	<i>Pinus taeda</i>
Shortleaf pine	<i>Pinus echinata</i>
Pitch pine	<i>Pinus rigida</i>
Pond pine	<i>Pinus serotina</i>
Virginia pine	<i>Pinus virginiana</i>
Other eastern softwoods:	
Eastern white pine	<i>Pinus strobus</i>
Eastern hemlock	<i>Tsuga canadensis</i>
Red spruce	<i>Picea rubens</i>
Table-Mountain pine	<i>Pinus pungens</i>
Eastern redcedar	<i>Juniperus virginiana</i>
Atlantic white-cedar	<i>Chamaecyparis thyoides</i>
Baldcypress	<i>Taxodium distichum</i>

<sup>5</sup> Little, Elbert L., Jr. CHECK LIST OF NATIVE AND NATURALIZED TREES OF THE UNITED STATES (INCLUDING ALASKA). U. S. Dep. Agr., Agr. Handbook 41, 472 pp. 1953.

## *Hardwoods*

### Select white oaks:

White oak	<i>Quercus alba</i>
Swamp white oak	<i>Quercus bicolor</i>
Bur oak	<i>Quercus macrocarpa</i>

### Select red oaks:

Northern red oak	<i>Quercus rubra</i>
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### Other white oaks:

Chestnut oak	<i>Quercus prinus</i>
Overcup oak	<i>Quercus lyrata</i>
Post oak	<i>Quercus stellata</i>

### Other red oaks:

Southern red oak	<i>Quercus falcata</i>
Black oak	<i>Quercus velutina</i>
Scarlet oak	<i>Quercus coccinea</i>
Pin oak	<i>Quercus palustris</i>
Water oak	<i>Quercus nigra</i>
Shingle oak	<i>Quercus imbricaria</i>
Willow oak	<i>Quercus phellos</i>

### Hickory

*Carya* species

### Soft maples:

Red maple	<i>Acer rubrum</i>
Silver maple	<i>Acer saccharinum</i>

### American beech

*Fagus grandifolia*

### Sweetgum

*Liquidamber styraciflua*

### Blackgum

*Nyssa sylvatica*

### Yellow-poplar

*Liriodendron tulipifera*

### Other eastern hardwoods:

Sugar maple	<i>Acer saccharum</i>
Yellow birch	<i>Betula alleghaniensis</i>
Sweet birch	<i>Betula lenta</i>
River birch	<i>Betula nigra</i>
Butternut	<i>Juglans cinerea</i>
Ash	<i>Fraxinus</i> species
American basswood	<i>Tilia americana</i>
Black cherry	<i>Prunus serotina</i>
Black walnut	<i>Juglans nigra</i>
American sycamore	<i>Platanus occidentalis</i>
Black locust	<i>Robinia pseudoacacia</i>
Elm	<i>Ulmus</i> species
Sweetbay	<i>Magnolia virginiana</i>

## STATISTICAL DATA

Tables of statistical data for forest area, timber volume, annual growth, and cut for the entire State (national standard tables) and associated sampling errors for subtotals and totals appear first.

These are followed by a series of tables that give statistics for each of the four geographic units. After the geographic-unit tables are the county statistics.

These county estimates have been prepared for users who wish statistics for a county or group of counties to meet their own particular needs. Estimated sampling errors are shown only for county totals. The users of these data are urged to evaluate the sampling error for each total in relation to their planning needs, use of the data, and decisions based upon these data.

County statistics were computed from means and variances of seven volume strata (stratified from aerial photographs) for each of the geographic units. These were applied to the volume strata within the county, assuming homogeneous forest conditions throughout each stratum. If homogeneity does not exist, the actual errors of some county estimates may be greater than the calculated sampling errors.

Here is an index of the tables that follow:

### *Statistical Tables for the State*

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  3. — By stand-size and ownership classes
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61. — By forest types  
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 63. — By stand-size classes  
 64. — By species (growing stock)  
 65. — By species (sawtimber)

Table 1.—*Land area of Maryland, by land classes, 1964*

Land class	Area <sup>1</sup>	
	Thousand acres	Percent
Commercial forest land	2,885	45.7
Unproductive forest land	43	.7
Productive-reserved forest land	35	.5
Total forest land	2,963	46.9
Nonforest land <sup>2</sup>	3,356	53.1
All land <sup>3</sup>	6,319	100.0

<sup>1</sup>Sampling errors for major breakdowns of area for all tables are given in table 11.

<sup>2</sup>Includes 28,000 acres of water according to survey standards of area classification but defined by the Bureau of Census as land.

<sup>3</sup>Land area from 1959 Census of Agriculture, Volume 1.

Table 2.—*Area of commercial forest land in Maryland, by ownership classes, 1964*

Ownership class	Area	
	Thousand acres	Percent
Federal <sup>1</sup>	14	0.5
State	144	5.0
County and municipal	31	1.0
Total public	189	6.5
Forest industry:		
Pulp and paper	33	1.1
Lumber	68	2.4
Total forest industry	101	3.5
Farmer-owned <sup>2</sup>	767	26.6
Miscellaneous private	1,828	63.4
All ownerships	2,885	100.0

<sup>1</sup>There is no National Forest land in Maryland.

<sup>2</sup>Estimate based upon sample plots; not from the Census of Agriculture.

Table 3.—*Area of commercial forest land in Maryland, by stand-size and ownership classes, 1964*  
 (In thousands of acres)

Stand-size class	All ownerships	Public	Forest industry	Farmer and misc. private
Sawtimber stands	1,793	104	37	1,652
Poletimber stands	754	60	45	649
Sapling-and-seedling stands	298	23	18	257
Nonstocked areas	40	2	1	37
All classes	2,885	189	101	2,595

Table 4.—*Area of commercial forest land in Maryland, by stand-volume classes for sawtimber and other stand-size classes, 1964*  
 (In thousands of acres)

Stand volumes per acre <sup>1</sup>	Area by stand-size classes		
	All stands	Sawtimber stands	Other stands
Less than 1,500 board feet	1,406	406	1,000
1,500 to 5,000 board feet	1,026	934	92
More than 5,000 board feet	453	453	—
All classes	2,885	1,793	1,092

<sup>1</sup>Net volume, International ¼-inch rule.

Table 5.—*Area of commercial forest land in Maryland, by stocking classes based on alternative stand components, 1964*  
 (In thousands of acres)

Stocking (percent)	Stocking classified in terms of—		
	All trees	Growing-stock trees	Desirable trees
90 to 100	1,091	194	28
80 to 90	976	566	9
70 to 80	441	659	28
60 to 70	166	627	52
50 to 60	96	354	300
40 to 50	42	212	163
30 to 40	19	161	234
20 to 30	21	40	414
10 to 20	33	32	389
Less than 10	—	40	1,268
All areas	2,885	2,885	2,885

Table 6.—*Area of commercial forest land in Maryland, by stocking classes of growing-stock trees and by stand-size classes, 1964*  
 (In thousands of acres)

Stocking class <sup>1</sup> (percent)	All stands	Saw-timber stands	Pole-timber stands	Sapling-and-seedling stands	Non-stocked areas
70 or more	1,419	991	336	92	—
40 to 70	1,193	705	312	176	—
10 to 40	233	97	106	30	—
Less than 10	40	—	—	—	40
All classes	2,885	1,793	754	298	40

<sup>1</sup> In terms of growing-stock trees.

Table 7.—*Area of commercial forest land in Maryland, by area-condition and ownership classes, 1964*  
 (In thousands of acres)

Area-condition class	All ownerships	Public	Forest industry	Farmer and misc. private
1	65	—	9	56
2	10	—	—	10
3	505	7	19	479
4	54	—	—	54
5	2,251	182	73	1,996
All classes	2,885	189	101	2,595

Table 8.—*Area of commercial forest land in Maryland, by growth-per-acre and ownership classes, 1964*  
 (In thousands of acres)

Growth-per-acre class (cubic feet)	All ownerships	Public	Forest industry	Farmer and misc. private
85 to 120	50	—	—	50
50 to 85	292	43	14	235
Less than 50	2,543	146	87	2,310
All classes	2,885	189	101	2,595

**Table 9.—Area of commercial forest land in Maryland, by forest types and ownership classes, 1964**  
 (In thousands of acres)

Forest type	All ownerships	Public ownerships	Private ownerships
White-red pine	39	7	32
Spruce-fir	12	—	12
Loblolly-shortleaf pine	598	6	592
Oak-pine	299	35	264
Oak-hickory	1,416	108	1,308
Oak-gum-cypress	340	13	327
Elm-ash-cottonwood	130	10	120
Maple-beech-birch	41	10	31
Aspen-birch	10	—	10
All types	2,885	189	2,696

**Table 10.—Area of noncommercial forest land in Maryland by forest type, 1964**  
 (In thousands of acres)

Forest type	All areas	Productive- reserved areas	Unproductive areas
Loblolly-shortleaf pine	11	1	10
Oak-hickory	37	33	4
Oak-gum-cypress	30	1	29
All types	78	35	43

Table 11.—*Sampling errors, in percent, for major area breakdowns in Maryland, 1964*

Table No.	Area breakdown classification	Sampling error	Table No.	Area breakdown classification	Sampling error
1	Forest-land area:		7	Area-condition class:	
	Commercial	2		1	37
	Unproductive	2		2	**
	Total	2		3	13
2	Ownership <sup>1</sup> :			4	43
	Farmer-owned	10		5	4
	Misc. private	5	8	Growth-per-acre class:	
	Farmer and misc. private	2		85 to 120 cubic feet	*
3	Stand-size class:			50 to 85 cubic feet	25
	Sawtimber	5		Less than 50 cubic feet	23
	Poletimber	10	9	Forest types:	
	Sapling and seedling	17		White-red pine	*
	Nonstocked	*		Spruce-fir	**
4	Stand-volume per acre:			Loblolly-shortleaf pine	11
	Less than 1,500 board feet	15		Oak-pine	18
	1,500 to 5,000 board feet	9		Oak-hickory	8
	More than 5,000 board feet	13		Oak-gum-cypress	17
6	Stocking class:			Elm-ash-cottonwood	28
	70 percent or more	6		Maple-beech-birch	15
	40 to 70 percent	7		Aspen-birch	**
	10 to 40 percent	21			
	Less than 10 percent	*			

<sup>1</sup>There are no sampling errors for areas in public ownership whose acreages were obtained from public records, nor for forestry industry whose acreages were obtained directly.

\* Sampling error of 50 to 99 percent.

\*\* Sampling error of 100 percent or higher.

Table 12.—Number of growing-stock trees on commercial forest land in Maryland, by diameter classes and by softwoods and hardwoods, 1964  
 (In thousands of trees)

D.b.h. class (inches)	All species	Softwood	Hardwood
1.0 - 2.9	438,616	173,949	264,667
3.0 - 4.9	229,763	77,656	152,107
5.0 - 6.9	146,734	34,443	112,291
7.0 - 8.9	85,112	22,873	62,239
9.0 - 10.9	50,575	11,615	38,960
11.0 - 12.9	23,470	5,935	17,535
13.0 - 14.9	14,694	2,435	12,259
15.0 - 16.9	8,237	1,580	6,657
17.0 - 18.9	4,678	614	4,064
19.0 - 28.9	5,067	392	4,675
29.0 and larger	402	—	402
All classes	1,007,348	331,492	675,856

Table 13.—Number of cull and growing-stock trees on commercial forest land in Maryland, by diameter groups and by softwoods and hardwoods, 1964  
 (In thousands of trees)

D.b.h. class (inches)	All trees <sup>1</sup>	Cull trees	Growing-stock trees
<b>Softwoods:</b>			
5.0 to 8.9	59,355	2,039	57,316
9.0 to 18.9	23,421	1,242	22,179
19.0 and larger	427	35	392
Total	83,203	3,316	79,887
<b>Hardwoods:</b>			
5.0 to 10.9	239,706	26,216	213,490
11.0 to 18.9	48,271	7,756	40,515
19.0 and larger	6,080	1,003	5,077
Total	294,057	34,975	259,082
All species	377,260	38,291	338,969

<sup>1</sup> The number of salvable dead trees is negligible in Maryland; therefore this item is omitted from this table.

Table 14.—*Volume of timber on commercial forest land in Maryland,  
by class of timber and by softwoods and hardwoods, 1964*  
(In millions of cubic feet)

Class of timber	All species	Softwoods	Hardwoods
Sawtimber trees:			
Sawlog portion	1,498	381	1,117
Upper-stem portion	275	52	223
Total	1,773	433	1,340
Poletimber trees	1,188	199	989
All growing-stock trees	2,961	632	2,329
Sound cull trees:			
Sawtimber size	85	6	79
Poletimber size	45	3	42
Total	130	9	121
Rotten cull trees:			
Sawtimber size	48	2	46
Poletimber size	11	—	46
Total	59	2	57
Total, all timber	3,150	643	2,507

Table 15.—*Volume of growing stock and sawtimber on commercial forest land in Maryland, by ownership classes and by softwoods and hardwoods, 1964*

Ownership class	Growing stock			Sawtimber		
	All species		Softwoods	All species		Softwoods
			Million cubic feet	161	344	Million board feet <sup>1</sup>
Public	186		25			286
Forest industry	116		56	60	179	54
Other private	2,659		551	2,108	6,300	1,324
All ownerships	2,961		632	2,329	6,823	1,507
						5,316

<sup>1</sup> International  $\frac{1}{4}$ -inch rule.

Table 16.—*Volume of growing stock and sawtimber on commercial forest land in Maryland, by stand-size classes and by softwoods and hardwoods, 1964*

Stand-size class	Growing stock			Sawtimber		
	All species		Softwoods	All species		Softwoods
			Million cubic feet	1,834	6,197	Million board feet <sup>1</sup>
Sawtimber stands	2,330		496			1,352
Poletimber stands	594		127	467	543	129
Sapling-and-seedling stands	37		9	28	83	26
Nonstocked areas	—		—	—	—	—
Total	2,961		632	2,329	6,823	1,507
						5,316

<sup>1</sup> International  $\frac{1}{4}$ -inch rule.

Table 17.—*Volume of growing stock on commercial forest land in Maryland,  
by species and diameter classes, 1964*  
(In millions of cubic feet)

Species	All classes	Diameter class (inches at breast height)								29.0- 28.9 and larger
		5.0- 6.9	7.0- 8.9	9.0- 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	17.0- 18.9	19.0- 28.9	
<b>Shortleaf-loblolly</b>										
pines	367	30	68	80	65	46	38	16	24	—
Virginia pine	228	28	52	53	48	19	22	4	2	—
Other softwoods	37	9	12	4	4	1	2	3	2	—
Total softwoods	632	67	132	137	117	66	62	23	28	—
Select white oaks	312	30	44	65	30	45	30	20	41	7
Select red oaks	176	17	19	19	29	31	17	21	20	3
Other white oaks	182	30	26	34	21	22	15	14	16	4
Other red oaks	399	33	61	70	52	54	37	29	47	16
Hickory	100	14	14	14	12	22	8	9	7	—
Soft maples	133	39	34	28	10	7	6	3	5	1
Beech	69	7	9	12	6	9	6	4	16	—
Sweetgum	209	26	27	47	37	22	27	11	12	—
Blackgum	102	14	12	16	21	18	7	7	6	1
Ash, walnut, cherry	76	13	16	13	14	6	6	3	5	—
Yellow-poplar	378	14	23	36	26	53	58	55	93	20
Other hardwoods	193	34	40	39	32	12	10	8	18	—
Total hardwoods	2,329	271	325	393	290	301	227	184	286	52
All species	2,961	338	457	530	407	367	289	207	314	52

Table 18.—Volume of sawtimber on commercial forest land in Maryland, by species and diameter classes, 1964  
 (In millions of board feet)<sup>1</sup>

Species	Diameter class (inches at breast height)						29.0 and larger
	All classes	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	
Shortleaf-loblolly pines	945	260	212	163	142	66	102
Virginia pine	504	168	159	66	84	16	11
Other softwoods	58	13	14	3	8	11	9
Total softwoods	1,507	441	385	232	234	93	122
Select white oaks	707	—	109	174	118	82	185
Select red oaks	475	—	102	121	71	85	84
Other white oaks	366	—	74	82	61	60	71
Other red oaks	944	—	188	208	148	124	204
Hickory	224	—	42	84	28	41	29
Soft maples	123	—	35	28	23	14	20
Beech	162	—	18	33	24	17	68
Sweetgum	431	—	133	84	106	51	57
Blackgum	220	—	72	65	25	28	26
Ash, walnut, cherry	122	—	46	23	21	12	20
Yellow-poplar	1,237	—	94	201	231	229	397
Other hardwoods	305	—	114	45	39	33	74
Total hardwoods	5,316	—	1,027	1,148	895	776	1,235
All species	6,823	441	1,412	1,380	1,129	869	1,357

<sup>1</sup> International  $\frac{1}{4}$ -inch rule.

Table 19.—*Volume of sawtimber on commercial forest land in Maryland,  
by species and quality classes, 1964*  
(In millions of board feet)<sup>1</sup>

Species	All classes	Standard-lumber logs			Tie-and- timber logs <sup>2</sup>
		Grade 1	Grade 2	Grade 3	
<b>Softwoods:</b>					
Yellow pines	1,449	44	204	1,201	—
Other softwoods <sup>3</sup>	58	—	—	—	—
Total	1,507	44	204	1,201	—
<b>Hardwoods:</b>					
Select white oaks	707	77	115	222	293
Select red oaks	475	60	80	176	159
Other white oaks	366	22	52	117	175
Other red oaks	944	46	121	264	513
Hickory	224	12	24	85	103
Soft maples	123	3	31	49	40
Sweetgum	431	26	83	152	170
Ash, walnut, cherry	122	9	21	48	44
Yellow-poplar	1,237	227	292	377	341
Other hardwoods	687	35	118	291	243
Total	5,316	517	937	1,781	2,081
All species	6,823	561	1,141	2,982	2,081

<sup>1</sup> International 1/4-inch rule.

<sup>2</sup> Meet minimum specifications for hardwood tie-and-timber logs but not for standard-lumber logs; not applicable to softwoods.

<sup>3</sup> Hemlock, spruce, and miscellaneous softwoods were not graded into standard-lumber logs.

Table 20.—*Sampling errors, in percent, for major timber volume breakdowns in Maryland, 1964*

Table No.	Volume breakdown classification	Sampling errors	Table No.	Volume breakdown classification	Sampling errors Cu. ft. Bd. ft.
		Percent			Percent
14	Class of timber:		17-18	Species:	
	Softwood growing stock	10		Shortleaf and loblolly pines	12 14
	Hardwood growing stock	4		Virginia pine	18 22
	Sawtimber trees	4		Other softwoods	30 32
	Poletimber trees	5		Select white oaks	11 13
	All growing stock	3		Select red oaks	12 13
	Sound cull trees	10		Other white oaks	19 33
	Rotten cull trees	12		Other red oaks	10 12
	All live trees	3		Hickory	16 22
15	Ownership classes:			Soft maples	10 17
	<i>Growing stock</i>			Beech	19 23
	Other public	19		Sweetgum	12 15
	Forest industry	36		Blackgum	16 18
	Farmer and misc.			Ash, walnut, cherry	24 24
	private	4		Yellow-poplar	14 15
	<i>Sawtimber</i>			Other hardwoods	12 17
	Other public	22	17-18	Diameter classes: (inches)	
	Forest industry	45		5.0- 6.9	7 —
	Farmer and misc.			7.0- 8.9	6 —
	private	5		9.0-10.9 <sup>1</sup>	6 17
	Softwood sawtimber	12		11.0-12.9	6 7
	Hardwood sawtimber	5		13.0-14.9	7 7
	All sawtimber	4		15.0-16.9	7 7
16	Stand-size classes:			17.0-18.9	10 9
	<i>Growing stock</i>			19.0-28.9	7 7
	Sawtimber stands	4		29.0 and larger	20 21
	Poletimber stands	12			
	Sapling and seedling stands	27			
	<i>Sawtimber</i>				
	Sawtimber stands	4			
	Poletimber stands	17			
	Sapling and seedling stands	39			

<sup>1</sup> Board-foot sampling error for this class is for softwoods only.

Table 21.—Net annual growth and annual cut of growing stock and sawtimber on commercial forest land in Maryland, by species, 1963

Species	Growing Stock		Sawtimber	
	Net annual growth	Annual timber cut	Net annual growth	Annual timber cut
Softwoods:	<i>Thousand cubic feet</i>		<i>Thousand board feet<sup>1</sup></i>	
Yellow pines	20,220	27,950	58,612	96,858
Other softwoods	170	150	513	—
Total	20,390	28,100	59,125	96,858
Hardwoods:				
Select oak species	15,598	10,895	46,489	39,679
Other oaks	15,000	7,204	47,896	21,437
Hickory	2,893	1,315	5,855	4,529
Sugar maple	565	733	948	1,555
Sweetgum	6,970	2,189	16,035	2,527
Soft maples	5,114	2,996	5,214	4,257
Ash, walnut, cherry	2,386	762	4,858	2,105
Yellow-poplar	13,882	12,284	56,517	43,137
Other hardwoods	10,864	7,348	26,188	17,580
Total	73,272	45,726	210,000	136,806
All species	93,662	73,826	269,125	233,664

<sup>1</sup> International  $\frac{1}{4}$ -inch rule.

Sampling errors for tables 21 through 27 are shown in table 28.

Table 22.—*Net annual growth and annual cut of growing stock on commercial forest land in Maryland, by ownership classes, and by softwoods and hardwoods, 1963*  
 (In thousands of cubic feet)

Ownership class	Net annual growth			Annual timber cut		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
Public	5,953	422	5,531	746	—	746
Forest industry	1,548	1,184	364	5,917	4,727	1,190
Farmer and misc. private	86,161	18,784	67,377	67,163	23,373	43,790
All ownerships	93,662	20,390	73,272	73,826	28,100	45,726

Table 23.—*Net annual growth and annual cut of sawtimber on commercial forest land in Maryland, by ownership classes, and by softwoods and hardwoods, 1963*  
 (In thousands of board feet)<sup>1</sup>

Ownership class	Net annual growth			Annual timber cut		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
Public	17,095	1,514	15,581	3,391	—	3,391
Forest industry	5,516	4,759	757	21,853	18,968	2,885
Farmer and misc. private	246,514	52,852	193,662	208,420	77,890	130,530
All ownerships	269,125	59,125	210,000	233,664	96,858	136,806

<sup>1</sup> International 1/4-inch rule.

Table 24.—*Components of net annual growth of growing stock and sawtimber on commercial forest land in Maryland, by species group, 1963*

Components	All species	Softwoods	Hardwoods
GROWING STOCK <i>Thousands of cubic feet</i>			
Growth on initial growing stock <sup>1</sup>			
	56,601	14,273	42,328
Ingrowth—saplings that became poletimber	50,863	9,902	40,961
Gross growth	107,464	24,175	83,289
Annual mortality	13,802	3,785	10,017
Net annual growth of growing stock	93,662	20,390	73,272
SAWTIMBER <i>Thousands of board feet</i> <sup>2</sup>			
Growth on initial sawtimber inventory <sup>1</sup>			
	148,558	24,090	124,468
Ingrowth—poletimber trees that became sawtimber	141,549	39,825	101,724
Gross growth	290,107	63,915	226,192
Annual mortality	20,982	4,790	16,192
Net annual growth of sawtimber	269,125	59,125	210,000

<sup>1</sup> Including growth on trees that were cut.

<sup>2</sup> International  $\frac{1}{4}$ -inch rule.

**Table 25.—Annual mortality of growing stock and sawtimber on commercial forest land in Maryland, by species, 1963**

Species	Growing stock	Sawtimber
	<i>Thousand cubic feet</i>	<i>Thousand board feet</i> <sup>1</sup>
<b>Softwoods:</b>		
Yellow pines	3,677	4,689
Other softwoods	108	101
Total	3,785	4,790
<b>Hardwoods:</b>		
Select oaks	2,477	4,660
Other oaks	1,804	893
Hickory	972	2,968
Soft maples	604	1,121
Sweetgum	948	386
Ash, walnut, cherry	169	653
Yellow-poplar	298	—
Other hardwoods	2,745	5,511
Total	10,017	16,192
All species	13,802	20,982

<sup>1</sup> International 1/4-inch rule.

Table 26.—*Annual mortality of growing stock and sawtimber on commercial forest land in Maryland, by ownership classes and by softwoods and hardwoods, 1963*

Ownership	Growing stock			Sawtimber				
	All species		Softwoods	Hardwoods	All species		Softwoods	Hardwoods
				<i>Thousands cubic feet</i>			<i>Thousands board feet</i> <sup>1</sup>	
Public	1,313	168		1,145	1,572	92	1,480	
Forest industry	1,128	422		706	982	635	347	
Farmer and misc. private	11,361	3,195		8,166	18,428	4,063	14,365	
All ownerships	13,802	3,785		10,017	20,982	4,790	16,192	

<sup>1</sup> International  $\frac{1}{4}$ -inch rule.

Table 27.—*Annual mortality of growing stock and sawtimber on commercial forest land in Maryland, by causes and by softwoods and hardwoods, 1963*

Cause of death	Growing stock			Sawtimber				
	All species		Softwoods	Hardwoods	All species		Softwoods	Hardwoods
				<i>Thousands cubic feet</i>			<i>Thousands board feet</i> <sup>1</sup>	
Fire	—	—	—	—	—	—	—	—
Insects	618	353	265		1,779		663	1,116
Diseases	3,411	794	2,617		5,410		853	4,557
Other	5,578	1,596	3,982		9,479		2,680	6,799
Unknown	4,195	1,042	3,153		4,314		594	3,720
All causes	13,802	3,785	10,017		20,982		4,790	16,192

<sup>1</sup> International  $\frac{1}{4}$ -inch rule.

Table 28.—Sampling errors, in percent, for major breakdowns of annual growth, cut, and mortality of growing stock and sawtimber, Maryland, 1963

Table No.	Breakdown classification	Sampling error	Table No.	Breakdown classification	Sampling error
		<i>Percent</i>			<i>Percent</i>
21	Growth in cubic feet:		23	Growth in board feet:	
	Softwoods	17		Public	39
	Hardwoods	37		Forest industry	55
	All species	29		Farmer and misc. private	13
	Cut in cubic feet:		24	Cut in board feet:	
	Softwoods	19		Public	67
	Hardwoods	18		Forest industry	38
	All species	13		Farmer and misc. private	16
	Growth in board feet:		25	Mortality by species group:	
	Softwoods	16		<i>Cu. ft.</i>	<i>Bd. ft.</i>
	Hardwoods	17		Softwoods	25
	All species	12		Hardwoods	18
	Cut in board feet:			All species	14
	Softwoods	20			23
	Hardwoods	20	26	Mortality by owner:	
	All species	15		Public	47
22	Growth in cubic feet:			Forest industry	37
	Public	33		Farmer and misc.	
	Forest industry	56		private	17
	Farmer and misc. private	34	27	Mortality by cause:	
	Cut in cubic feet:			Fire	—
	Public	58		Insect	49
	Forest industry	39		Disease	41
	Farmer and misc. private	15		Other	21
				Unknown	20
					60

Table 29.—*Total output of timber products, by products, by type of material used, and by softwoods and hardwoods, Maryland, 1963*

Product and species group	Total output in standard units		Output from roundwood		Output from plant byproducts (standard units)
	Units	Number	Standard units	M cubic feet	
<b>Sawlogs:</b>					
Softwood	M board feet <sup>1</sup>	73,023	73,023	13,469	—
Hardwood	M board feet <sup>1</sup>	117,168	117,168	23,403	—
Total	M board feet <sup>1</sup>	190,191	190,191	36,872	—
<b>Veneer logs and bolts:</b>					
Softwood	M board feet	1,035	1,035	222	—
Hardwood	M board feet	14,891	14,891	3,375	—
Total	M board feet	15,926	15,926	3,597	—
<b>Cooperage logs and bolts:</b>					
Softwood	M board feet	360	360	63	—
Hardwood	M board feet	6,840	6,840	1,375	—
Total	M board feet	7,200	7,200	1,438	—
<b>Pulpwood:</b>					
Softwood	Standard Cords <sup>2</sup>	108,200	72,500	5,800	35,700
Hardwood	Standard Cords <sup>2</sup>	75,388	65,488	5,239	9,900
Total	Standard Cords <sup>2</sup>	183,588	137,988	11,039	45,600
<b>Piling:</b>					
Softwood	M linear feet	5,945	5,945	3,567	—
Hardwood	M linear feet	1,305	1,305	927	—
Total	M linear feet	7,250	7,250	4,494	—
<b>Poles:</b>					
Softwood	M pieces	7	7	80	—
Hardwood	M pieces	—	—	—	—
Total	M pieces	7	7	80	—
<b>Mine timbers (rounds):</b>					
Softwood	M cubic feet	—	—	—	—
Hardwood	M cubic feet	48	48	48	—
Total	M cubic feet	48	48	48	—
<b>Miscellaneous industrial wood:<sup>3</sup></b>					
Softwood	M cubic feet	—	—	—	—
Hardwood	M cubic feet	471	428	428	43
Total	M cubic feet	471	428	428	43

CONTINUED

TABLE 29.—CONTINUED

Product and species group	Total output in standard units		Output from roundwood		Output from plant byproducts (standard units)
	Units	Number	Standard units	M cubic feet	
Posts (round and split):					
Softwood	M pieces	3	3	3	—
Hardwood	M pieces	157	157	155	—
Total	M pieces	160	160	158	—
Fuelwood:					
Softwood	Standard Cords	20,675	9,987	799	10,688
Hardwood	Standard Cords	87,450	56,663	4,533	30,787
Total	Standard Cords	108,125	66,650	5,332	41,475
All products: <sup>4</sup>					
Softwood	M cubic feet	27,714	24,003	24,003	3,711
Hardwood	M cubic feet	42,781	39,483	39,483	3,298
Total	M cubic feet	70,495	63,486	63,486	7,009

<sup>1</sup> International 1/4-inch rule.<sup>2</sup> Rough wood basis (for example, chips converted to equivalent standard cords).<sup>3</sup> Includes hewn ties, excelsior bolts, shingle bolts, turnery bolts, chemical wood, and the like.<sup>4</sup> Does not include 4,944,000 cubic feet of residues used for agricultural bedding.Table 30.—*Total output of roundwood products, by source and by softwoods and hardwoods, Maryland, 1963*  
(In thousands of cubic feet)

Source	All species	Softwoods	Hardwoods
Growing-stock trees <sup>1</sup>			
Sawtimber trees	52,313	21,444	30,869
Poletimber trees	6,650	1,587	5,063
Total	58,963	23,031	35,932
Cull trees <sup>1</sup>	168	—	168
Salvable dead trees <sup>1</sup>	242	100	142
Other sources <sup>2</sup>	4,113	872	3,241
All sources	63,486	24,003	39,483

<sup>1</sup> On commercial forest land.<sup>2</sup> Includes noncommercial forest land, nonforest land such as fence rows, trees less than 5.0 inches in diameter, and tree tops and limbs.

Table 31.—*Annual timber cut from growing stock on commercial forest lands, by products and logging residues, and by softwoods and hardwoods, Maryland, 1963*  
(In thousands of cubic feet)

Products and residues	All species	Softwoods	Hardwoods
Roundwood products:			
Sawlogs	36,139	13,151	22,988
Veneer logs and bolts	3,525	217	3,308
Cooperage logs and bolts	1,413	63	1,350
Pulpwood	9,772	5,459	4,313
Piling	4,494	3,567	927
Poles	80	80	—
Mine timbers	40	—	40
Miscellaneous industrial wood	362	—	362
Posts	138	3	135
Fuelwood	3,000	491	2,509
All products	58,963	23,031	35,932
Logging residues	14,863	5,069	9,794
Timber cut	73,826	28,100	45,726

Table 32.—*Annual timber cut from live sawtimber on commercial forest lands, by products and logging residues, and by softwoods and hardwoods, Maryland, 1963*  
(In thousands of board feet)<sup>1</sup>

Products and residues	All species	Softwoods	Hardwoods
Roundwood products:			
Sawlogs	151,039	53,701	97,338
Veneer logs and bolts	14,898	889	14,009
Cooperage logs and bolts	5,978	270	5,708
Pulpwood	29,276	21,308	7,968
Piling	18,489	14,565	3,924
Poles	328	328	—
Mine timbers	63	—	63
Miscellaneous industrial wood	565	—	565
Posts	221	11	210
Fuelwood	3,534	859	2,675
All products	224,391	91,931	132,460
Logging residues	9,273	4,927	4,346
Timber cut	233,664	96,858	136,806

<sup>1</sup> International 1/4-inch rule.

Table 33.—*Volume of plant residues by industrial source and type of residue, and by softwoods and hardwoods, Maryland, 1963*  
 (In thousands of cubic feet)

Industrial Source	Species and character of residues					
	All species		Softwoods		Hardwoods	
	Total	Course <sup>1</sup>	Total	Course	Fine	Total
Lumber industry	4,954	3,592	1,362	401	234	167
Other primary industries <sup>3</sup>	328	135	193	—	—	328
All industries	5,282	3,727	1,555	401	234	167

<sup>1</sup> Unused material suitable for chipping, such as slabs, edgings, and veneer cores.

<sup>2</sup> Unused material not suitable for chipping, such as sawdust and shavings.

<sup>3</sup> Includes a negligible volume of plant residues from the veneer industry.

Table 34.—Timber growth projections for Maryland, 1963<sup>1</sup>

Year	Assumed cut			Projected growth		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
GROWING STOCK (In millions of cubic feet)						
1963*	73.8	28.1	45.7	93.7	20.4	73.3
1973	73.1	28.6	44.5	81.3	16.4	64.9
1983	66.1	20.4	45.7	79.2	14.3	64.9
1993	60.4	13.4	47.0	78.8	13.4	65.4
SAWTIMBER (In millions of board feet) <sup>2</sup>						
1963	234	97	137	269	59	210
1973	229	83	146	250	43	207
1983	206	54	152	268	35	233
1993	193	34	159	290	32	258

<sup>1</sup> Based upon the following assumptions: (a) that the difference between annual growth and timber cut for softwoods will steadily diminish until growth and cut are equal; (b) that the trend level cut for hardwoods between 1950 and 1963 will hold constant; and (c) that the current trend in forest management and programs will continue.

<sup>2</sup> International 1/4-inch rule.

\* Year of inventory.

Table 35.—Land area of Maryland by land classes and geographic units, 1964  
(In thousands of acres)

Land class	North-central	Southern	Southern Eastern Shore	Western	State total
Commercial forest land	1,419.6	434.2	541.5	490.2	2,885.5
Unproductive forest land	31.0	1.5	10.5	.3	43.3
Productive-reserved forest land	30.3	.3	1.0	3.5	35.1
Total forest land	1,480.9	436.0	553.0	494.0	2,963.9
Nonforest land	2,338.0	232.2	583.0	202.3	3,355.5
All land	3,818.9	668.2	1,136.0	696.3	6,319.4
<i>Sampling errors, in percent</i>					
Commercial forest land	3.0	4.4	3.0	3.8	1.8

**Table 36.—Area of commercial forest land in Maryland, by ownership classes and geographic units 1964**  
(In thousands of acres)

Ownership class	North-Central	Southern	Southern Eastern Shore	Western	State total
Federal	11.3	2.6	0	0	13.9
State	13.6	3.9	16.1	110.7	144.3
County and municipal	28.8	0	0	2.3	31.1
Forest industry:					
Pulp and paper	3.7	5.1	24.3	0	33.1
Lumber	1.2	1.7	54.6	10.2	67.7
Total forest industry	4.9	6.8	78.9	10.2	100.8
Farmer-owned	364.4	137.4	144.9	120.0	766.7
Miscellaneous private	996.6	283.5	301.6	247.0	1,828.7
All ownerships	1,419.6	434.2	541.5	490.2	2,885.5

*Sampling errors, in percent<sup>1</sup>*

Farmer-owned	16	26	16	35	10
Miscellaneous private	7	10	13	16	5

<sup>1</sup> Public ownership and forest industry ownership data were taken from records, and therefore had no sampling errors.

**Table 37.—Area of commercial forest land in Maryland, by stand-size classes and geographic units, 1964**  
(In thousands of acres)

Stand-size class	North-central	Southern	Southern Eastern Shore	Western	State total
Sawtimber stands	982.1	281.2	327.2	202.9	1,793.4
Poletimber stands	301.0	81.6	171.0	200.3	753.9
Sapling-and-seedling stands	124.7	64.2	32.7	76.1	297.7
Nonstocked areas	11.8	7.2	10.6	10.9	40.5
All classes	1,419.6	434.2	541.5	490.2	2,885.5

	<i>Sampling errors, in percent</i>				
Sawtimber stands	6	12	11	17	5
Poletimber stands	18	28	20	17	10
Sapling-and-seedling stands	26	40	*	34	17
Nonstocked areas	**	**	**	**	**

\* Sampling error is between 50 and 99 percent.

\*\* Sampling error is 100 percent and over.

Table 38.—*Area of commercial forest land in Maryland, by forest types and geographic units, 1964*  
 (In thousands of acres)

Forest type	North-central	Southern	Southern Eastern Shore	Western	State total
Yellow pines	181.1	156.9	260.1	—	598.1
Oak-pine	131.0	59.5	74.1	34.4	299.0
Oak-hickory	824.3	145.6	77.7	368.7	1,416.3
Oak-gum	173.1	62.8	93.1	10.6	339.6
Elm-ash-red maple	84.8	9.4	31.2	4.9	130.3
Maple-beech	3.2	—	5.3	33.1	41.6
Misc. types	22.1	—	—	38.5	60.6
All types	1,419.6	434.2	541.5	490.2	2,885.5

Sampling errors, in percent					
Yellow pines	24	21	14	—	11
Oak-pine	30	36	34	*	18
Oak-hickory	12	30	32	9	8
Oak-gum	25	32	30	*	17
Elm-ash-red maple	35	**	*	40	28
Maple-beech	—	—	—	47	47
Misc. types	**	—	—	*	*

\* Sampling error is between 50 and 99 percent.

\*\* Sampling error is 100 percent and over.

Table 39.—*Volume of timber on commercial forest land in Maryland,  
by class of timber and geographic units, 1964*  
(In millions of cubic feet)

Class of timber	North-central	Southern	Southern Eastern Shore	Western	State total
<b>Sawtimber trees:</b>					
Sawlog portion	849.9	238.2	269.3	140.5	1,497.9
Upper-stem portion	156.0	43.4	46.2	30.0	275.6
Total	1,005.9	281.6	315.5	170.5	1,773.5
Poletimber trees	480.6	146.1	265.1	295.8	1,187.6
All growing-stock trees	1,486.5	427.7	580.6	466.3	2,961.1
<b>Sound cull trees:</b>					
Sawtimber size	35.7	17.9	21.6	9.8	85.0
Poletimber size	26.8	9.0	4.5	4.8	45.1
Total	62.5	26.9	26.1	14.6	130.1
<b>Rotten cull trees:</b>					
Sawtimber size	20.7	4.6	8.6	13.8	47.7
Poletimber size	4.9	.9	2.6	2.6	11.0
Total	25.6	5.5	11.2	16.4	58.7
<b>Total, all timber</b>	<b>1,574.6</b>	<b>460.1</b>	<b>617.9</b>	<b>497.3</b>	<b>3,149.9</b>
<i>Sampling errors, in percent</i>					
Sawtimber trees	6	7	9	10	4.1
Poletimber trees	9	11	10	8	4.7
All growing-stock trees	5	6	6	5	3.1
Sound cull trees	15	21	24	26	10.1
Rotten cull trees	18	27	29	21	11.5

Table 40.—*Volume of growing stock on commercial forest land in Maryland, by ownership classes, softwoods and hardwoods, and geographic units, 1964*  
 (In millions of cubic feet)

Ownership and species group	North-central	Southern	Southern Eastern Shore	Western	State total
Public:					
Softwoods	11.2	—	0.7	12.9	24.8
Hardwoods	47.0	—	6.1	108.3	161.4
Total	58.2	—	6.8	121.2	186.2
Forest industry:					
Softwoods	—	0.3	56.1	—	56.4
Hardwoods	14.2	—	17.6	27.9	59.7
Total	14.2	.3	73.7	27.9	116.1
Other private:					
Softwoods	173.9	122.8	231.0	22.9	550.6
Hardwoods	1,240.2	304.6	269.1	294.3	2,108.2
Total	1,414.1	427.4	500.1	317.2	2,658.8
All ownerships:					
Softwoods	185.1	123.1	287.8	35.8	631.8
Hardwoods	1,301.4	304.6	292.8	430.5	2,329.3
Total	1,486.5	427.7	580.6	466.3	2,961.1
<i>Sampling errors, in percent</i>					
Total line only, for:					
Public	39	—	**	20	19
Forest industry	**	**	46	*	36
Other private	6	6	9	16	4

\* Sampling error is between 50 and 99 percent.

\*\* Sampling error is 100 percent and over.

Table 41.—*Volume of sawtimber on commercial forest land in Maryland, by ownership classes, softwoods and hardwoods, and geographic units, 1964*  
 (In millions of board feet)

Ownership and species group	North-central	Southern	Southern Eastern Shore	Western	State total
Public:					
Softwoods	29.6	—	2.7	25.5	57.8
Hardwoods	100.6	—	22.4	163.4	286.4
Total	130.2	—	25.1	188.9	344.2
Forest industry:					
Softwoods	—	—	125.4	—	125.4
Hardwoods	22.9	—	1.9	29.0	53.8
Total	22.9	—	127.3	29.0	179.2
Other private:					
Softwoods	446.3	303.3	554.0	19.6	1,323.2
Hardwoods	3,339.2	787.8	440.6	408.5	4,976.1
Total	3,785.5	1,091.1	994.6	428.1	6,299.3
All ownerships:					
Softwoods	475.9	303.3	682.1	45.1	1,506.4
Hardwoods	3,462.7	787.8	464.9	600.9	5,316.3
Total	3,938.6	1,091.1	1,147.0	646.0	6,822.7
<i>Sampling errors, in percent</i>					
Total line only, for:					
Public	42	—	**	23	22
Forest industry	**	—	*	*	45
Other private	6	7	12	20	5

\* Sampling error is between 50 and 99 percent.

\*\* Sampling error is 100 percent and over.

Table 42.—*Volume of growing stock on commercial forest land in Maryland, by stand-size classes, softwoods and hardwoods, and geographic units, 1964*  
 (In millions of cubic feet)

Stand-size class and species group	North- central	Southern	Southern Eastern Shore	Western	State total
<b>Sawtimber stands:</b>					
Softwoods	148.2	100.1	235.5	12.1	495.9
Hardwoods	1,148.3	247.7	199.1	239.0	1,834.1
Total	1,296.5	347.8	434.6	251.1	2,330.0
<b>Poletimber stands:</b>					
Softwoods	35.6	21.2	46.3	23.7	126.8
Hardwoods	143.2	51.6	89.3	182.9	467.0
Total	178.8	72.8	135.6	206.6	593.8
<b>Other stands:</b>					
Softwoods	1.3	1.8	6.0	—	9.1
Hardwoods	9.9	5.3	4.4	8.6	28.2
Total	11.2	7.1	10.4	8.6	37.3
<b>All stands:</b>					
Softwoods	185.1	123.1	287.8	35.8	631.8
Hardwoods	1,301.4	304.6	292.8	430.5	2,329.3
Total	1,486.5	427.7	580.6	466.3	2,961.1

*Sampling errors, in percent*

Total line only, for:					
Sawtimber stands	6	9	10	17	4
Poletimber stands	24	32	25	21	12
Other stands	46	*	*	44	27
All stands:					
Softwoods	24	21	13	31	10.2
Hardwoods	6	10	13	6	4.2
Total	5	6	6	5	3.1

\* Sampling error is between 50 and 99 percent.

Table 43.—*Volume of sawtimber on commercial forest land in Maryland, by stand-size classes, softwoods and hardwoods, and geographic units 1964*  
 (In millions of board feet)

Stand-size class and species group	North- central	Southern	Southern Eastern Shore	Western	State total
<b>Sawtimber stands:</b>					
Softwoods	451.7	267.8	600.5	31.9	1,351.9
Hardwoods	3,277.6	719.7	387.4	460.6	4,845.3
Total	3,729.3	987.5	987.9	492.5	6,197.2
<b>Poletimber stands:</b>					
Softwoods	24.2	33.8	57.9	13.2	129.1
Hardwoods	158.5	56.6	71.1	128.0	414.2
Total	182.7	90.4	129.0	141.2	543.3
<b>Other stands:</b>					
Softwoods	—	1.7	23.7	—	25.4
Hardwoods	26.6	11.5	6.4	12.3	56.8
Total	26.6	13.2	30.1	12.3	82.2
<b>All stands:</b>					
Softwoods	475.9	303.3	682.1	45.1	1,506.4
Hardwoods	3,462.7	787.8	464.9	600.9	5,316.3
Total	3,938.6	1,091.1	1,147.0	646.0	6,822.7

*Sampling errors, in percent*

Total line only, for:					
Sawtimber stands	6	8	10	13	4
Poletimber stands	29	43	33	35	17
Other stands	*	*	*	*	39
All stands:					
Softwoods	28	22	14	36	11.9
Hardwoods	7	11	19	9	5.3
Total	6	7	8	9	4.0

\* Sampling error is between 50 and 99 percent.

Table 44.—*Volume of growing stock on commercial forest land in north-central Maryland, by species and diameter classes, 1964*  
 (In millions of cubic feet)

Species	Diameter class (inches at breast height)							29.0 and larger
	All classes	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	
Shortleaf-loblolly pines	63.9	3.0	2.9	8.5	12.9	13.1	14.8	4.1
Virginia pine	110.6	15.1	24.4	19.5	21.5	10.5	14.2	1.6
Other softwoods	10.6	1.4	1.3	1.8	2.5	1.0	1.0	.7
Total softwoods	185.1	19.5	28.6	29.8	36.9	24.6	30.0	6.4
Select white oaks	154.8	7.8	17.5	22.5	14.2	24.5	18.4	15.5
Select red oaks	72.1	4.8	7.0	4.8	12.2	12.8	10.1	7.3
Other white oaks	103.8	9.4	9.5	17.5	11.1	16.6	12.8	10.1
Other red oaks	221.6	9.6	24.8	30.5	29.2	34.4	26.9	12.4
Hickory	52.6	6.2	6.5	6.4	6.6	14.5	4.5	34.9
Soft maples	51.9	14.1	11.1	10.7	4.1	1.9	4.1	1.9
Beech	50.5	3.2	4.7	7.8	5.5	7.9	5.4	2.2
Sweetgum	81.5	5.7	11.5	22.8	18.4	6.1	7.3	34.9
Blackgum	54.4	5.8	7.3	6.6	11.1	10.1	4.9	4.2
Yellow poplar	316.8	12.3	17.6	27.9	20.9	39.9	48.4	50.6
Black locust	34.1	4.0	8.6	12.7	7.8	—	—	—
Other hardwoods	107.3	17.3	17.3	18.7	18.5	12.3	7.3	5.1
Total hardwoods	1,301.4	100.2	143.4	188.9	159.6	181.0	150.1	130.9
All species	1,486.5	119.7	172.0	218.7	196.5	205.6	180.1	140.2

(Sampling errors are shown in table 52)

Table 45.—*Volume of growing stock on commercial forest land in southern Maryland, by species and diameter classes, 1964*  
 (In millions of cubic feet)

Species	Diameter class (inches at breast height)						29.0 and larger		
	All classes	5.0- 6.9	7.0- 8.9	9.0- 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	17.0- 18.9	19.0- 28.9
Shortleaf-loblolly pines	22.1	0.2	1.5	3.6	4.1	2.0	5.7	2.5	—
Virginia pine	100.6	10.9	21.6	30.9	21.1	7.6	7.7	—	.8
Other softwoods	.4	—	.4	—	—	—	—	—	—
Total softwoods	123.1	11.1	23.5	34.5	25.2	9.6	13.4	2.5	3.3
Select white oaks	42.9	2.2	3.1	4.8	7.9	6.4	7.8	1.7	9.0
Other white oaks	17.4	2.1	2.2	3.4	3.4	2.6	.6	.5	1.3
Red oaks	45.2	.8	6.2	4.0	9.9	8.0	2.4	7.1	4.6
Hickory	20.6	3.6	1.2	3.2	1.7	.8	3.3	2.3	4.5
Beech	10.7	1.6	2.8	1.5	—	.5	—	—	4.3
Sweetgum	62.8	11.1	5.1	13.4	9.1	6.2	10.2	3.2	4.5
Blackgum	9.8	2.3	2.2	1.5	.8	.7	.6	.9	—
Yellow-poplar	56.3	1.4	4.0	7.4	4.7	12.4	9.8	2.9	7.7
Other hardwoods	38.9	4.7	7.5	8.2	7.6	3.1	3.2	2.5	2.1
Total hardwoods	304.6	29.8	34.3	47.4	45.1	40.7	37.9	21.1	38.0
All species	427.7	40.9	57.8	81.9	70.3	50.3	51.3	23.6	41.3
									10.3

Table 46.—*Volume of growing stock on commercial forest land in southern Eastern Shore, Maryland, by species and diameter classes, 1964*  
 (In millions of cubic feet)

Species	All classes	Diameter class (inches at breast height)						29.0 and larger
		5.0- 6.9	7.0- 8.9	9.0- 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	
Shortleaf-loblolly pines	281.6	27.4	63.9	68.5	47.4	31.1	17.2	9.2
Other softwoods	6.2	1.1	.6	1.6	2.9	—	—	—
Total softwoods	287.8	28.5	64.5	70.1	50.3	31.1	17.2	9.2
Select white oaks	46.3	9.9	11.3	12.0	4.0	4.2	1.0	1.4
Other white oaks	13.1	1.6	2.6	3.8	2.5	.4	—	1.3
Red oaks	63.4	9.3	10.3	11.0	9.3	7.6	7.8	3.3
Soft maples	43.0	10.5	14.7	10.2	2.6	2.9	1.2	4.8
Sweetgum	65.0	9.3	10.3	11.4	9.6	9.3	9.0	.9
Blackgum	34.8	6.3	2.4	6.5	9.3	6.8	1.4	1.5
Other hardwoods	27.2	6.3	9.2	3.2	3.1	3.1	—	.6
Total hardwoods	292.8	53.2	60.8	58.1	40.4	34.3	20.4	11.5
All species	580.6	81.7	125.3	128.2	90.7	65.4	37.6	20.7
								30.1
								.9

Table 47.—*Volume of growing stock on commercial forest land in western Maryland, by species and diameter classes, 1964*  
 (In millions of cubic feet)

Species	Diameter class (inches at breast height)							29.0 and larger
	All classes	5.0- 6.9	7.0- 8.9	9.0- 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	
Virginia pine	11.3	0.8	5.7	0.7	3.1	1.0	—	—
Hemlock	17.9	6.4	7.6	.7	.2	1.1	1.6	.2
Other softwoods	6.6	.8	2.0	1.3	1.2	—	—	1.3
Total softwoods	35.8	8.0	15.3	2.7	4.5	1.1	1.6	1.5
Select white oaks	67.4	9.9	11.4	25.8	4.1	9.7	2.4	2.4
Select red oaks	95.5	11.6	12.4	13.5	15.2	16.9	4.8	9.0
Other red oaks	77.4	13.6	19.2	25.0	5.3	6.2	1.9	1.4
Other white oaks	47.4	16.8	11.9	8.9	3.5	2.2	2.0	.9
Hickory	23.7	3.3	6.1	4.3	3.9	4.5	.4	1.0
Sugar maple	15.5	4.9	3.0	1.5	1.6	.2	—	4.0
Soft maples	32.2	14.8	7.4	4.8	2.5	2.3	.1	.2
Basswood	8.3	1.3	1.9	1.2	1.1	.8	.3	1.4
Black cherry	25.6	3.1	5.0	6.2	3.6	2.1	3.5	.5
Black locust	6.5	.8	2.5	1.8	1.4	—	—	—
Other hardwoods	31.0	7.2	5.8	5.6	3.1	.7	3.3	1.2
Total hardwoods	430.5	87.3	86.6	98.6	45.3	45.6	19.0	20.1
All species	466.3	95.3	101.9	101.3	49.8	46.7	20.1	21.7

Table 48.—Volume of sawtimber on commercial forest land in north-central Maryland, by species and diameter classes, 1964  
 (In millions of board feet)

Species	All classes	Diameter class (inches at breast height)						29.0 and larger
		9.0- 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	17.0- 18.9	19.0- 28.9	
Shortleaf-loblolly pines	204.8	26.5	40.5	45.6	55.6	18.5	18.1	—
Virginia pine	244.1	59.8	70.4	35.9	55.0	15.7	7.3	—
Other softwoods	27.0	5.7	8.2	3.1	3.6	3.8	2.6	—
Total softwoods	475.9	92.0	119.1	84.6	114.2	38.0	28.0	—
Select white oaks	449.0	—	51.1	93.8	73.7	62.6	128.7	39.1
Select red oaks	221.5	—	42.0	50.8	45.1	29.4	43.0	11.2
Other white oaks	272.2	—	40.6	63.1	51.6	54.0	54.4	8.5
Other red oaks	624.5	—	104.6	130.3	108.7	82.4	142.9	55.6
Hickory	126.9	—	21.7	53.4	15.6	27.4	8.8	—
Soft maples	63.0	—	13.7	8.1	16.0	11.5	10.5	3.2
Beech	138.6	—	17.9	29.9	19.6	17.5	51.5	2.2
Sweetgum	158.4	—	63.1	22.9	26.3	17.6	28.5	—
Blackgum	123.6	—	36.4	36.8	17.0	17.5	15.9	—
Yellow-poplar	1,053.0	—	77.1	150.2	188.2	212.9	364.0	60.6
Black locust	30.6	—	25.7	—	—	1.1	3.8	—
Other hardwoods	201.4	—	61.3	44.2	27.8	22.5	45.6	—
Total hardwoods	3,462.7	—	555.2	683.5	589.6	556.4	897.6	180.4
All species	3,938.6	92.0	674.3	768.1	703.8	594.4	925.6	180.4

(Sampling errors are shown in table 52)

Table 49.—*Volume of sawtimber on commercial forest land in southern Maryland,  
by species and diameter classes, 1964*  
(In millions of board feet)

Species	Diameter class (inches at breast height)						29.0 and larger
	All classes	9.0- 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	17.0- 18.9	
Shortleaf-loblolly pines	72.8	11.4	13.7	6.4	21.6	10.0	9.7
Virginia pine	230.5	101.1	69.9	27.1	28.6	—	3.8
Total softwoods <sup>1</sup>	303.3	112.5	83.6	33.5	50.2	10.0	13.5
Select white oaks	133.3	—	28.9	27.8	31.9	7.1	37.6
Other white oaks	39.1	—	12.0	10.0	2.6	2.7	6.0
Red oaks	147.2	—	38.2	32.6	10.4	32.2	21.4
Hickory	51.0	—	7.0	3.5	11.5	10.0	19.0
Beech	18.5	—	—	2.2	—	—	16.3
Sweetgum	136.4	—	34.2	26.0	43.0	13.7	19.5
Blackgum	15.3	—	2.5	3.0	2.2	3.5	—
Yellow-poplar	174.4	—	16.2	47.0	42.0	12.2	32.6
Other hardwoods	72.6	—	26.9	11.7	12.3	11.2	10.5
Total hardwoods	787.8	—	165.9	163.8	155.9	92.6	162.9
All species	1,091.1	112.5	249.5	197.3	206.1	102.6	176.4
							46.7

<sup>1</sup> Volume of other softwoods is negligible.

Table 50.—*Volume of sawtimber on commercial forest land in southern Eastern Shore, Maryland, by species and diameter classes, 1964*  
 (In millions of board feet)

Species	All classes	Diameter class (inches at breast height)					29.0 and larger
		9.0- 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	17.0- 18.9	
Shortleaf-loblolly pines	667.6	222.8	157.0	110.4	65.3	37.9	74.2
Other softwoods <sup>1</sup>	14.5	4.8	9.7	—	—	—	—
Total softwoods	682.1	227.6	166.7	110.4	65.3	37.9	74.2
Select white oaks	50.2	—	14.8	17.4	3.4	5.3	9.3
Other white oaks	20.6	—	9.2	1.7	—	—	6.4
Red oaks	122.1	—	32.2	28.2	28.7	12.5	20.5
Soft maples	29.7	—	9.7	11.7	4.9	—	3.4
Sweetgum	136.2	—	36.1	35.6	36.5	19.5	8.5
Blackgum	72.9	—	33.2	24.7	5.3	6.5	3.2
Other hardwoods	33.2	—	11.6	12.7	—	4.2	4.7
Total hardwoods	464.9	—	146.8	132.0	78.8	48.0	56.0
All species	1,147.0	227.6	313.5	242.4	144.1	85.9	130.2
							3.3

<sup>1</sup> Includes 12,800,000 board feet of Virginia pine.

Table 51.—*Volume of sawtimber on commercial forest land in western Maryland, by species and diameter classes, 1964*  
 (In millions of board feet)

Species	All classes	Diameter class (inches at breast height)						29.0 and larger
		9.0- 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	17.0- 18.9	19.0- 28.9	
Virginia pine	16.1	2.1	10.8	3.2	—	—	—	—
Hemlock	15.0	2.5	.6	.2	4.0	6.8	.9	—
Other softwoods	14.0	4.7	3.7	—	—	—	5.6	—
Total softwoods	45.1	9.3	15.1	3.4	4.0	6.8	6.5	—
Select white oaks	74.5	—	14.5	35.1	8.7	6.6	9.6	—
Select red oaks	222.6	—	54.2	64.1	19.5	47.5	37.0	.3
Other red oaks	80.6	—	18.2	22.9	7.0	5.6	23.0	3.9
Other white oaks	34.4	—	11.8	7.9	7.1	3.2	4.4	—
Hickory	36.4	—	13.1	17.5	1.2	3.8	.8	—
Sugar maple	24.5	—	6.7	.5	1.1	—	16.2	—
Soft maples	18.2	—	8.4	8.6	.4	—	.6	.2
Basswood	14.0	—	3.7	2.7	.9	1.2	5.5	—
Black cherry	41.6	—	12.4	7.3	12.6	6.7	2.6	—
Black locust	5.0	—	5.0	—	—	—	—	—
Other hardwoods	49.1	—	10.9	2.6	12.2	4.7	18.3	.4
Total hardwoods	600.9	—	158.9	169.2	70.7	79.3	118.0	4.8
All species	646.0	9.3	174.0	172.6	74.7	86.1	124.5	4.8

Table 52.—*Sampling errors, in percent, for growing stock (GS) and sawtimber (ST) on commercial forest land in Maryland, by species and geographic units, 1964*

Species	North-central		Southern		Southern Eastern Shore		Western	
	GS	ST	GS	ST	GS	ST	GS	ST
Shortleaf-loblolly pines	38	40	34	37	14	15	—	—
Virginia pine	29	38	23	25	—	—	48	*
Hemlock	—	—	—	—	—	—	36	43
Other softwoods	*	*	**	—	*	*	**	*
Select white oaks	15	17	25	30	26	43	26	27
Select red oaks	19	20	—	—	—	—	15	17
Other white oaks	31	40	48	*	43	*	21	27
Other red oaks	13	15	24	22	23	33	30	34
Hickory	20	26	46	*	—	—	30	38
Sugar maple	—	—	—	—	—	—	36	*
Soft maples	16	23	—	—	21	40	19	33
Beech	24	26	35	*	—	—	—	—
Sweetgum	23	26	18	26	20	27	—	—
Blackgum	20	25	30	*	34	32	—	—
Basswood	—	—	—	—	—	—	49	49
Yellow-poplar	17	16	24	27	—	—	—	—
Black cherry	—	—	—	—	—	—	*	*
Black locust	39	*	—	—	—	—	47	*
Other hardwoods	15	21	24	31	26	42	22	21

\* Sampling error is between 50 and 99 percent.

\*\* Sampling error is 100 percent and over.

Table 53.—*Net annual growth of growing stock on commercial forest land in Maryland, by species and geographic units, 1963*  
(In thousands of cubic feet)

Species	North-central	Southern	Southern Eastern Shore	Western	State totals
<b>Softwoods:</b>					
Yellow pines <sup>1</sup>	5,639	4,224	10,175	352	20,390
<b>Hardwoods:</b>					
Select oak species	8,309	1,598	1,512	4,179	15,598
Other oaks	8,552	1,562	1,935	2,951	15,000
Hickory	1,617	593	—	683	2,893
Sweetgum	2,715	2,091	2,164	—	6,970
Soft maples	2,112	223	1,651	1,128	5,114
Yellow-poplar	11,816	2,066	—	—	13,882
Other hardwoods	8,540	1,431	1,932	1,912	13,815
Total	43,661	9,564	9,194	10,853	73,272
All species	49,300	13,788	19,369	11,205	93,662

<sup>1</sup> Includes 170,000 cubic feet of growth for other softwoods.

**Table 54.—Annual cut of growing stock on commercial forest land in Maryland, by species and geographic units, 1963**  
 (In thousands of cubic feet)

Species	North-central	Southern	Southern Eastern Shore	Western	State totals
<b>Softwoods:</b>					
Yellow pines <sup>1</sup>	4,144	11,868	11,938	150	28,100
<b>Hardwoods:</b>					
Select oak species	2,340	2,914	1,361	4,280	10,895
Other oaks	2,476	2,199	478	2,051	7,204
Hickory	233	—	55	1,027	1,315
Ash, walnut, cherry	398	—	—	364	762
Sugar maple	—	—	80	653	733
Sweetgum	1,135	447	607	—	2,189
Soft maples	597	92	327	1,980	2,996
Yellow-poplar	11,129	1,155	—	—	12,284
Other hardwoods	4,805	1,025	720	798	7,348
Total	23,113	7,832	3,628	11,153	45,726
All species	27,257	19,700	15,566	11,303	73,826
<i>Sampling errors, in percent</i>					
All softwoods	*	33	23	*	19
All hardwoods	29	30	38	35	18
All species	27	20	22	35	13

<sup>1</sup> Includes 150,000 cubic feet of cut for other softwoods.

\*Sampling error is between 50 and 90 percent.

**Table 55.—Net annual growth of sawtimber on commercial forest land in Maryland, by species and geographic units, 1963**  
 (In thousands of board feet)

Species	North-central	Southern	Southern Eastern Shore	Western	State totals
<b>Softwoods:</b>					
Yellow pines <sup>1</sup>	16,034	7,113	35,048	930	59,125
<b>Hardwoods:</b>					
Select oak species	26,319	5,369	2,264	12,537	46,489
Other oaks	34,027	4,460	5,154	4,255	47,896
Hickory	3,780	1,089	—	986	5,855
Sweetgum	6,249	4,809	4,977	—	16,035
Soft maples	2,726	524	1,200	764	5,214
Yellow-poplar	48,495	8,022	—	—	56,517
Other hardwoods	19,861	3,291	4,444	4,398	31,994
Total	141,457	27,564	18,039	22,940	210,000
All species	157,491	34,677	53,087	23,870	269,125

<sup>1</sup> Includes 513,000 board feet of growth for other softwoods.

Table 56.—*Annual cut of sawtimber on commercial forest land in Maryland,  
by species and geographic units, 1963*  
(In thousands of board feet)

Species	North-central	Southern	Southern Eastern Shore	Western	State totals
<b>Softwoods:</b>					
Yellow pines <sup>1</sup>	16,072	34,186	46,600	—	96,858
<b>Hardwoods:</b>					
Select oak species	8,893	12,194	5,181	13,411	39,679
Other oaks	7,543	7,096	2,026	4,772	21,437
Hickory	864	—	—	3,665	4,529
Ash, walnut, cherry	1,020	—	—	1,085	2,105
Sugar maple	—	—	—	1,555	1,555
Sweetgum	—	954	1,573	—	2,527
Soft maples	—	434	1,037	2,786	4,257
Yellow-poplar	37,234	5,903	—	—	43,137
Other hardwoods	8,780	4,170	3,970	660	17,580
Total	64,334	30,751	13,787	27,934	136,806
All species	80,406	64,937	60,387	27,934	233,664
<i>Sampling errors, in percent</i>					
All softwoods	*	39	23	—	20
All hardwoods	33	32	49	41	20
All species	30	22	24	41	15

<sup>1</sup> Volume of cut for other softwoods is negligible.

\*Sampling error is between 50 and 99 percent.

Table 57.—*Land area of Maryland, by land classes and counties, 1964*  
 (In thousands of acres)

County	Total land area <sup>1</sup>	Nonforest land area	Forest land area		
			Noncom- mercial <sup>2</sup>	Commercial	Sampling error <sup>3</sup>
Allegany	272.6	70.8	1.5	200.3	6
Anne Arundel	266.9	140.9	.2	125.8	13
Baltimore*	439.6	277.4	3.1	159.1	14
Calvert	140.2	48.6	0	91.6	18
Caroline	204.8	123.1	.1	81.6	16
Carroll	289.9	212.5	0	77.4	22
Cecil	225.3	127.9	.8	96.6	20
Charles	293.1	105.9	1.8	185.4	10
Dorchester	371.2	212.4	3.6	155.2	8
Frederick	425.0	266.9	12.4	145.7	15
Garrett	423.7	131.5	2.3	289.9	7
Harford	286.7	125.0	29.8	131.9	15
Howard	160.0	103.3	.8	55.9	28
Kent	181.8	127.1	1.3	53.4	32
Montgomery	315.5	213.2	1.6	100.7	17
Prince Georges	310.4	146.1	6.2	158.1	12
Queen Annes	238.7	163.3	0	75.4	21
St. Marys	234.9	77.7	0	157.2	11
Somerset	212.5	123.2	3.8	85.5	8
Talbot	178.6	129.9	0	48.7	30
Washington	295.7	181.4	5.0	109.3	18
Wicomico	243.2	129.8	0	113.4	10
Worcester	309.1	117.6	4.1	187.4	8
Total	6,319.4	3,355.5	78.4	2,885.5	2

<sup>1</sup> Land area from 1959 Census of Agriculture.

<sup>2</sup> Includes nonproductive and productive-reserved forest land.

<sup>3</sup> In percent, for commercial forest land, at the 68 percent probability level.

\*Includes Baltimore City.

Table 58.—*Area of commercial forest land in Maryland,  
by ownership classes and counties, 1964*  
(In thousands of acres)

County	Publicly-owned <sup>1</sup>		Privately-owned		Total
	State	Other public	Farmer-owned <sup>2</sup>	Other private	
Allegany	36.3	0.7	45.4	117.9	200.3
Anne Arundel	1.3	8.0	19.2	97.3	125.8
Baltimore	.7	13.0	25.3	120.1	159.1
Calvert	0	0	30.3	61.3	91.6
Caroline	.5	0	37.1	44.0	81.6
Carroll	.2	2.6	25.0	49.6	77.4
Cecil	2.7	.2	22.9	70.8	96.6
Charles	3.9	.4	59.5	121.6	185.4
Dorchester	1.5	0	40.4	113.3	155.2
Frederick	.2	7.8	32.8	104.9	145.7
Garrett	74.4	1.6	74.6	139.3	289.9
Harford	0	0	27.0	104.9	131.9
Howard	.6	1.8	14.8	38.7	55.9
Kent	.5	0	19.5	33.4	53.4
Montgomery	.4	2.2	24.5	73.6	100.7
Prince Georges	3.0	3.3	36.8	115.0	158.1
Queen Annes	**	0	30.0	45.4	75.4
St. Marys	0	2.2	47.6	107.4	157.2
Somerset	.6	0	24.1	60.8	85.5
Talbot	.1	0	23.8	24.8	48.7
Washington	3.4	1.2	25.7	79.0	109.3
Wicomico	1.6	0	33.3	78.5	113.4
Worcester	12.4	0	47.1	127.9	187.4
Total	144.3	45.0	766.7	1,929.5	2,885.5

<sup>1</sup> Acreages are from ownership records; not from sample plots.

<sup>2</sup> State total obtained from sample plots. The distribution by counties is based upon a reduction factor that was applied to the acreages of farm woodland by counties in the 1959 Census of Agriculture.

\*\* Less than 50 acres.

Table 59.—*Area of commercial forest land in Maryland, by stand-size classes and counties, 1964*  
 (In thousands of acres)

County	Sawtimber stands	Poletimber stands	Sapling-and-seedling stands	Nonstocked areas	Total
Allegany	81.2	84.7	30.0	4.4	200.3
Anne Arundel	79.3	30.0	15.4	1.1	125.8
Baltimore	106.6	35.9	15.5	1.1	159.1
Calvert	56.6	19.8	13.2	2.0	91.6
Caroline	58.4	16.5	6.0	.7	81.6
Carroll	49.7	19.0	8.2	.5	77.4
Cecil	66.1	19.9	10.2	.4	96.6
Charles	125.5	31.3	25.7	2.9	185.4
Dorchester	93.1	50.0	9.1	3.0	155.2
Frederick	104.9	28.9	10.8	1.1	145.7
Garrett	121.7	115.6	46.1	6.5	289.9
Harford	97.2	25.1	8.5	1.1	131.9
Howard	38.8	12.1	4.5	.5	55.9
Kent	33.3	13.0	6.7	.4	53.4
Montgomery	73.3	19.8	7.1	.5	100.7
Prince Georges	113.0	31.1	12.1	1.9	158.1
Queen Annes	51.0	16.6	7.0	.8	75.4
St. Marys	99.1	30.5	25.3	2.3	157.2
Somerset	53.7	24.7	5.0	2.1	85.5
Talbot	34.3	10.9	2.6	.9	48.7
Washington	76.2	22.2	10.1	.8	109.3
Wicomico	65.9	37.8	7.6	2.1	113.4
Worcester	114.5	58.5	11.0	3.4	187.4
Total	1,793.4	753.9	297.7	40.5	2,885.5

Table 60.—*Area of commercial forest land in Maryland, by stocking-percent classes of desirable trees and counties, 1964*  
 (In thousands of acres)

County	Desirable tree stocking class			Total
	70 to 100 percent	40 to 70 percent	Under 40 percent	
Allegany	—	—	200.3	200.3
Anne Arundel	1.4	11.3	113.1	125.8
Baltimore	1.4	16.9	140.8	159.1
Calvert	5.5	37.9	48.2	91.6
Caroline	.5	8.2	72.9	81.6
Carroll	.7	9.6	67.1	77.4
Cecil	.8	8.8	87.0	96.6
Charles	9.2	74.2	102.0	185.4
Dorchester	9.2	59.6	86.4	155.2
Frederick	.8	15.1	129.8	145.7
Garrett	—	—	289.9	289.9
Harford	.7	11.4	119.8	131.9
Howard	.4	6.1	49.4	55.9
Kent	.6	5.6	47.2	53.4
Montgomery	.5	10.3	89.9	100.7
Prince Georges	.9	12.6	144.6	158.1
Queen Annes	.6	8.5	66.3	75.4
St. Marys	9.5	66.0	81.7	157.2
Somerset	5.3	28.0	52.2	85.5
Talbot	.2	5.6	42.9	48.7
Washington	.8	9.6	98.9	109.3
Wicomico	6.6	45.0	61.8	113.4
Worcester	9.2	65.6	112.6	187.4
Total	64.8	515.9	2,304.8	2,885.5

Table 61.—Area of commercial forest land in Maryland, by forest types and counties, 1964  
 (In thousands of acres)

County	Forest type					Miscellaneous types <sup>1</sup>	Total
	Yellow pines	Oak-pine	Oak-hickory	Oak-gum	Elm-ash-red maple		
Allegany	—	19.9	145.4	6.7	—	28.3	200.3
Anne Arundel	41.2	12.8	45.7	15.3	8.2	2.6	125.8
Baltimore	11.0	21.2	88.3	29.4	4.6	4.6	159.1
Calvert	33.4	12.2	28.5	15.2	2.3	—	91.6
Caroline	13.5	8.8	39.8	13.6	4.7	1.2	81.6
Carroll	2.0	5.9	54.1	9.8	4.4	1.2	77.4
Cecil	4.8	10.2	66.4	10.8	3.2	1.2	96.6
Charles	67.6	23.5	66.6	24.1	3.6	—	185.4
Dorchester	78.2	19.8	22.2	25.6	9.4	—	155.2
Frederick	—	2.8	133.2	—	8.5	1.2	145.7
Garrett	—	14.5	223.3	3.9	4.9	43.3	289.9
Harford	4.0	6.0	93.9	20.7	3.6	3.7	131.9
Howard	—	4.8	40.1	7.0	3.1	.9	55.9
Kent	8.4	7.4	24.5	9.5	3.6	—	53.4
Montgomery	4.8	8.4	69.2	11.8	5.5	—	100.7
Prince Georges	47.6	14.0	64.6	19.5	9.6	2.8	158.1
Queen Anne's	4.6	9.9	33.0	16.7	11.2	—	75.4
St. Marys	55.9	23.8	50.5	23.5	3.5	—	157.2
Somerset	43.1	8.5	9.8	15.2	7.0	1.9	85.5
Talbot	28.1	4.8	6.3	7.0	2.5	—	48.7
Washington	11.1	14.0	65.2	2.0	12.1	4.9	109.3
Wicomico	57.6	10.6	14.2	18.9	10.9	1.2	113.4
Worcester	81.2	35.2	31.5	33.4	3.9	2.2	187.4
Total	598.1	299.0	1,416.3	339.6	130.3	102.2	2,885.5

<sup>1</sup> Acreage in this type is mostly the white pine (39,000 acres) and maple-beech type (41,600 acres). It also includes small acreages of the spruce type and the aspen forest type.

Table 62.—*Net cubic-foot volume of all trees on commercial forest land in Maryland, by counties, tree classes, and softwoods and hardwoods, 1964*  
 (In millions of cubic feet)

County	Sawtimber trees		Poletimber trees		Cull trees		Total net volume
	Softwoods	Hardwoods	Softwoods	Hardwoods	Softwoods	Hardwoods	
Allegany	6.1	66.8	10.2	115.1	0.7	11.3	210.2
Anne Arundel	10.7	67.2	4.6	35.2	.7	6.8	125.2
Baltimore	15.5	94.3	5.7	46.6	.8	9.0	171.9
Calvert	16.9	40.0	6.8	24.6	.4	6.5	95.2
Caroline	8.9	52.8	2.7	25.8	.4	4.7	95.3
Carroll	7.0	42.1	3.1	20.7	.5	4.3	77.7
Cecil	7.4	58.7	3.1	29.6	.5	5.4	104.7
Charles	42.2	86.8	15.8	48.7	.7	13.4	207.6
Dorchester	55.0	31.9	26.2	46.5	.3	10.2	170.1
Frederick	14.9	94.5	4.8	46.0	.8	8.5	169.5
Garrett	6.4	91.2	13.1	157.4	.6	18.4	287.1
Harford	14.3	90.6	4.0	44.3	.6	7.8	161.6
Howard	6.1	34.6	2.0	16.9	.3	3.2	63.1
Kent	3.5	26.7	2.0	14.0	.3	2.8	49.3
Montgomery	9.7	67.4	3.2	32.7	.5	5.9	119.4
Prince Georges	16.6	101.0	4.9	51.0	.8	9.0	183.3
Queen Anne's	7.3	43.0	2.7	21.3	.5	4.2	79.0
St. Marys	29.4	66.3	12.0	38.2	.5	10.9	157.3
Somerset	31.3	18.8	17.6	25.9	.1	6.0	99.7
Talbot	6.4	29.1	1.8	14.3	.3	2.8	54.7
Washington	8.7	66.9	3.5	34.1	.6	6.1	119.9
Wicomico	39.7	22.2	18.2	33.5	.2	7.3	121.1
Worcester	68.8	47.8	31.0	66.2	.3	12.9	227.0
Total	432.8	1,340.7	199.0	988.6	11.4	177.4	3,149.9

Table 63.—Volume of growing stock and sawtimber on commercial forest land in Maryland, by counties and stand-size classes, 1964

County	Growing Stock			Sawtimber			Percent Saw-timber stands	All stands	Sam-ping error	Percent Pole-timber stands	Other stands	All stands	Sam-ping error
	Saw-timber stands	Pole-timber stands	Other stands	All stands	Saw-timber stands	Pole-timber stands							
Allegany	102.9	91.8	3.5	198.2	10	212.1	67.7	5.0	284.8	1.6			
Anne Arundel	100.1	16.3	1.3	117.7	22	285.4	16.7	3.0	305.1	29			
Baltimore	139.9	21.0	1.2	162.1	19	405.3	21.3	3.0	429.6	23			
Calvert	68.9	18.0	1.4	88.3	19	196.2	22.0	2.7	220.9	25			
Caroline	79.1	10.5	.6	90.2	26	229.2	10.8	1.3	241.3	33			
Carroll	62.2	10.1	.6	72.9	26	180.4	10.5	1.6	192.5	32			
Cecil	86.5	11.4	.9	98.8	23	246.5	10.7	2.2	259.4	29			
Charles	162.5	28.2	2.8	193.5	11	459.0	34.9	5.7	499.6	14			
Dorchester	117.9	38.8	2.9	159.6	13	268.9	38.3	8.4	315.6	20			
Frederick	141.1	18.1	1.0	160.2	21	408.0	18.4	2.4	428.8	26			
Garrett	148.2	114.8	5.1	268.1	8	280.4	73.5	7.3	361.2	12			
Harford	135.4	17.0	.8	153.2	22	390.4	17.1	2.0	409.5	24			
Howard	51.8	7.4	.4	59.6	31	150.8	7.7	.9	159.4	40			
Kent	39.4	6.2	.6	46.2	26	111.0	6.4	1.4	118.8	29			
Montgomery	99.9	12.4	.7	113.0	24	287.8	12.3	1.7	301.8	29			
Prince Georges	152.4	19.9	1.2	173.5	21	436.3	20.7	2.7	459.7	27			
Queen Anne's	64.5	9.2	.6	74.3	30	185.9	9.8	1.5	197.2	34			
St. Marys	116.4	26.6	2.9	145.9	14	332.3	33.5	4.8	370.6	18			
Somerset	72.6	19.4	1.6	93.6	17	157.3	18.6	5.0	180.9	25			
Talbot	44.7	6.6	.3	51.6	32	130.0	7.8	.6	138.4	38			
Washington	99.5	12.7	1.0	113.2	27	282.3	12.5	2.3	297.1	33			
Wicomico	81.7	29.5	2.4	113.6	16	188.1	29.2	6.6	223.9	26			
Worcester	162.4	47.9	3.5	213.8	11	373.6	42.9	10.1	426.6	18			
Total	2,330.0	593.8	37.3	2,961.1	3	6,197.2	543.3	82.2	6,822.7	4			

Table 64.—Volume of growing stock on commercial forest land in Maryland,  
by counties and species, 1964  
(In millions of cubic feet)

County	SOFTWOODS				HARDWOODS			
	Shortleaf-loblolly pines	Virginia pine	Other <sup>1</sup> softwoods	Total softwoods	Select white oaks	Select red oaks	Other white oaks	Other red oaks
Allegany	—	5.2	11.1	16.3	27.8	41.1	17.9	36.3
Anne Arundel	1.3	20.4	2.0	23.7	6.8	5.7	7.9	8.8
Baltimore	2.1	6.8	1.6	10.5	20.6	7.8	12.7	26.2
Calvert	4.6	19.0	.1	23.7	8.3	1.7	3.7	7.2
Caroline	16.1	22.2	—	38.3	4.9	2.1	3.4	12.6
Carroll	—	.7	—	.7	8.0	3.5	5.3	25.2
Cecil	.4	6.7	—	7.1	9.8	5.2	7.2	17.9
Charles	9.9	47.9	.2	58.0	20.0	3.1	8.0	19.0
Dorchester	79.0	1.8	.4	81.2	12.6	.3	4.0	16.5
Frederick	1.0	4.4	2.7	8.1	19.4	9.0	13.5	28.6
Garrett	—	6.1	13.4	19.5	39.6	54.4	29.5	41.1
Harford	—	.6	—	.6	18.8	8.3	12.3	28.8
Howard	—	—	—	—	11.6	2.8	4.5	12.1
Kent	7.0	1.7	1.1	9.8	4.2	2.4	2.6	2.4
Montgomery	—	5.0	.2	5.2	11.9	5.5	9.0	17.7
Prince Georges	2.8	27.7	1.4	31.9	17.6	8.2	11.0	12.5
Queen Annes	11.2	2.5	—	13.7	7.8	3.7	5.4	6.8
St. Marys	7.6	33.7	.1	41.4	14.6	2.4	5.7	11.8
Somerset	48.2	.6	.1	48.9	6.4	.2	1.7	10.0
Talbot	20.9	4.0	—	24.9	2.6	2.2	1.0	4.1
Washington	1.1	7.9	1.6	10.6	10.8	5.7	8.0	17.9
Wicomico	56.3	1.3	.3	57.9	8.9	.2	3.2	11.3
Worcester	98.1	1.4	.3	99.8	18.4	.8	4.2	24.1
Total	367.6	227.6	36.6	631.8	311.4	176.3	181.7	398.9
								100.2

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TABLE 64—CONTINUED

County	HARDWOODS						Total all species
	Soft maples	Beech	Sweet- gum	Black- gum	Yellow- poplar	Black locust	
Allegany	13.3	2.0	—	1.4	—	3.0	27.7
Anne Arundel	4.3	3.7	11.7	4.4	24.9	3.0	181.9
Baltimore	5.3	5.5	14.7	6.1	32.8	3.6	94.0
Calvert	1.2	2.4	13.5	2.0	12.3	.2	11.1
Caroline	1.4	2.5	6.2	1.7	9.1	.9	64.6
Carroll	2.5	1.1	—	2.6	15.1	1.5	51.9
Cecil	3.8	2.7	4.6	3.5	23.7	2.1	7.3
Charles	2.5	4.4	27.0	4.3	24.6	.6	14.1
Dorchester	11.6	1.0	16.8	9.0	1.0	—	4.5
Frederick	6.2	5.8	—	6.6	39.3	3.8	78.4
Garrett	18.9	2.5	—	2.0	.9	3.5	159.6
Harford	5.7	7.8	10.6	6.8	31.0	4.4	—
Howard	1.9	2.1	3.4	2.2	11.6	1.3	152.1
Kent	2.0	.9	2.2	1.5	11.5	1.1	160.2
Montgomery	3.8	4.4	7.2	4.2	29.1	3.2	248.6
Prince Georges	6.1	7.0	13.4	6.5	36.0	4.5	153.2
Queen Anne's	2.8	1.3	3.5	2.5	16.8	1.3	59.6
St. Marys	2.1	3.9	22.3	3.5	19.4	.4	36.4
Somerset	6.6	.8	10.9	4.8	.8	—	46.2
Talbot	1.7	2.0	4.0	1.8	4.3	—	107.8
Washington	4.4	3.7	—	4.0	31.6	3.4	113.0
Wicomico	8.2	.7	11.3	6.8	.6	—	141.6
Worcester	16.6	1.2	26.0	14.2	1.7	—	173.5
Total	132.9	69.4	209.3	102.4	378.1	41.8	226.9
							2,329.3
							2,961.1

<sup>1</sup> Includes mostly hemlock in Allegany and Garrett counties.

Table 65.—Volume of sawtimber on commercial forest land in Maryland,  
by counties and species, 1964  
(In millions of board feet)

County	SOFTWOODS				HARDWOODS			
	Shortleaf-loblolly pines	Virginia pine	Other softwoods <sup>1</sup>	Total softwoods	Select white oaks	Select red oaks	Other white oaks	Other red oaks
Allegany	—	8.4	14.1	22.5	32.2	105.0	8.5	37.0
Anne Arundel	4.7	49.3	5.0	59.0	22.9	17.2	19.4	26.0
Baltimore	7.8	14.7	4.1	26.6	57.4	23.3	32.6	75.8
Calvert	14.6	43.1	—	57.7	24.4	6.3	8.2	23.9
Caroline	64.5	39.1	—	103.6	14.1	6.5	9.3	36.1
Carroll	—	1.8	—	1.8	22.8	10.6	14.0	65.8
Cecil	1.4	16.5	—	17.9	27.8	16.4	18.2	48.1
Charles	33.5	111.6	—	145.1	65.8	11.7	18.3	58.5
Dorchester	187.9	4.5	.6	193.0	13.4	.7	6.8	30.9
Frederick	2.6	11.4	4.3	18.3	56.3	27.7	36.7	78.3
Garrett	—	7.7	14.9	22.6	42.3	117.6	25.9	43.6
Harford	—	1.6	—	1.6	54.5	25.1	33.8	81.1
Howard	—	—	—	—	30.5	8.4	12.3	35.1
Kent	19.3	2.2	2.7	24.2	12.4	7.7	5.9	6.6
Montgomery	—	12.9	.5	13.4	34.4	17.2	24.2	48.4
Prince Georges	10.7	68.4	6.4	85.5	51.8	25.0	29.1	38.4
Queen Annes	31.9	3.2	—	35.1	22.4	11.6	14.1	20.1
St. Marys	24.7	75.8	—	100.5	43.1	9.0	12.6	37.8
Somerset	107.3	1.6	.2	109.1	7.0	.4	3.1	20.4
Talbot	59.1	5.2	—	64.3	10.2	6.5	2.8	17.6
Washington	2.8	17.8	4.0	24.6	31.5	18.3	19.8	47.1
Wicomico	135.0	3.3	.4	138.7	9.2	.5	5.0	20.5
Worcester	237.4	3.4	.5	241.3	20.6	1.8	5.7	46.9
Total	945.2	503.5	57.7	1,506.4	707.0	474.5	366.3	944.0
								223.8

CONTINUED

TABLE 65 — CONTINUED

County	HARDWOODS						Total all species		
	Soft maples	Beech	Sweet-gum	Black-gum	Yellow-poplar	Black locust	Other hardwoods	Total Hardwoods	
Allegany	5.5	2.8	—	3.5	—	3.0	49.5	262.3	284.8
Anne Arundel	5.7	9.6	23.5	9.5	82.6	2.6	18.1	246.1	305.1
Baltimore	7.0	15.2	28.9	13.9	109.9	3.3	22.8	403.0	429.6
Calvert	2.8	4.2	29.3	3.1	36.8	.4	12.5	163.2	220.9
Caroline	1.9	6.7	12.4	3.8	30.5	.8	11.8	137.7	241.3
Carroll	3.2	3.2	—	5.9	52.5	1.3	6.1	190.7	192.5
Cecil	4.4	7.3	8.2	7.9	78.8	1.9	13.4	241.5	259.4
Charles	4.6	7.1	57.2	6.8	77.7	1.4	26.2	354.5	499.6
Dorchester	7.6	—	34.7	19.1	1.7	—	4.4	122.6	315.6
Frederick	7.5	16.1	—	15.4	130.5	3.4	22.6	410.5	428.8
Garrett	12.7	2.1	—	5.0	2.6	2.0	63.7	338.6	361.2
Harford	6.6	21.8	20.7	15.7	102.4	4.2	25.9	407.9	409.5
Howard	2.5	5.9	6.5	5.2	38.9	1.2	8.1	159.4	159.4
Kent	2.3	2.1	4.1	3.1	38.6	.9	7.2	94.6	118.8
Montgomery	4.2	12.6	13.8	9.6	96.8	3.0	13.6	288.4	301.8
Prince Georges	7.2	19.2	27.7	14.8	118.2	4.0	23.3	374.2	459.7
Queen Annes	3.6	3.3	7.0	5.7	56.0	1.0	11.6	162.1	197.2
St. Marys	4.7	7.2	49.9	5.4	59.9	.7	19.3	270.1	370.6
Somerset	5.4	—	20.2	10.8	1.3	—	2.0	71.8	180.9
Talbot	2.1	5.4	5.6	4.3	12.7	—	3.2	74.1	138.4
Washington	4.8	10.2	—	8.8	104.6	3.0	13.7	272.5	297.1
Wicomico	5.1	—	23.4	14.3	1.1	—	3.6	85.2	223.9
Worcester	11.6	—	57.9	28.7	3.3	—	6.3	185.3	426.6
Total	123.0	162.0	431.0	220.3	1,237.4	38.1	388.9	5,316.3	6,822.7

<sup>1</sup> Includes mostly hemlock in Allegany and Garrett counties.



**PHOTO CREDITS:** Except as otherwise noted, the photographs used in this report were provided by the Maryland Department of Forests and Parks.

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